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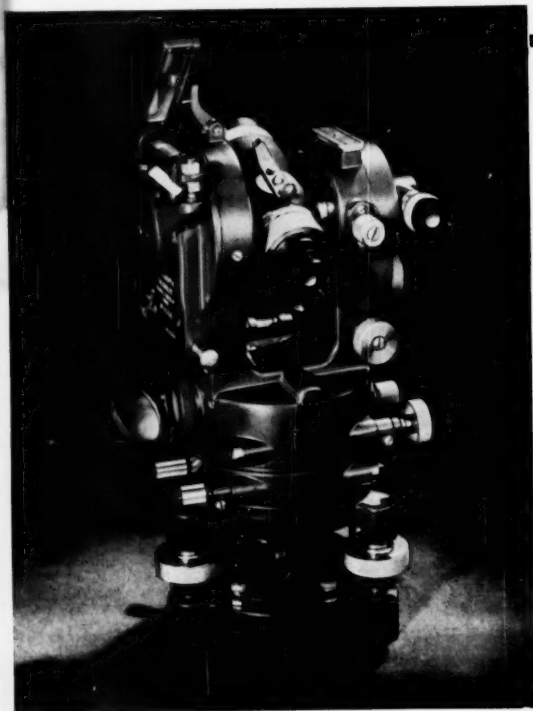
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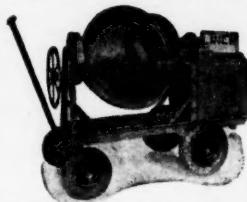
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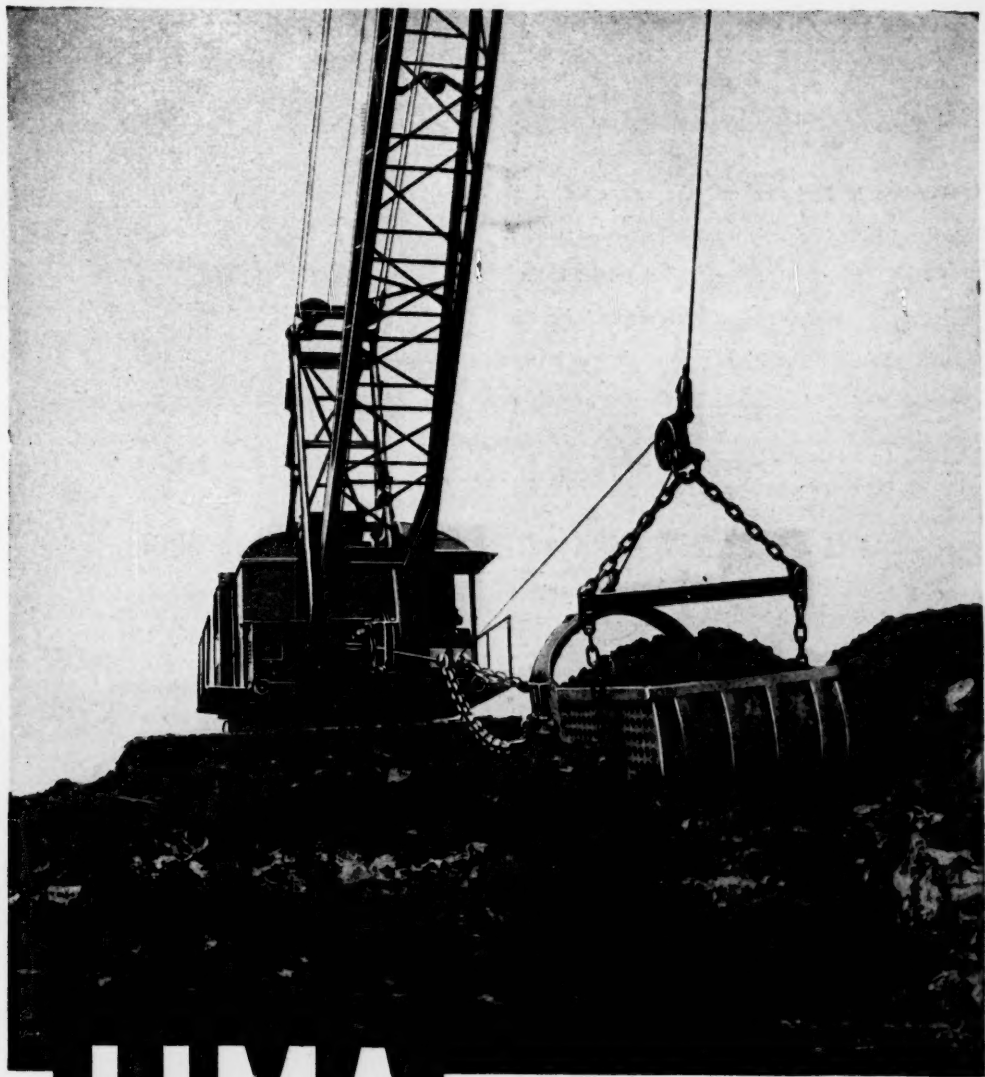
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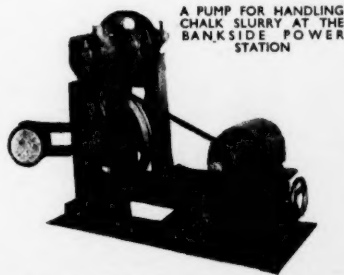
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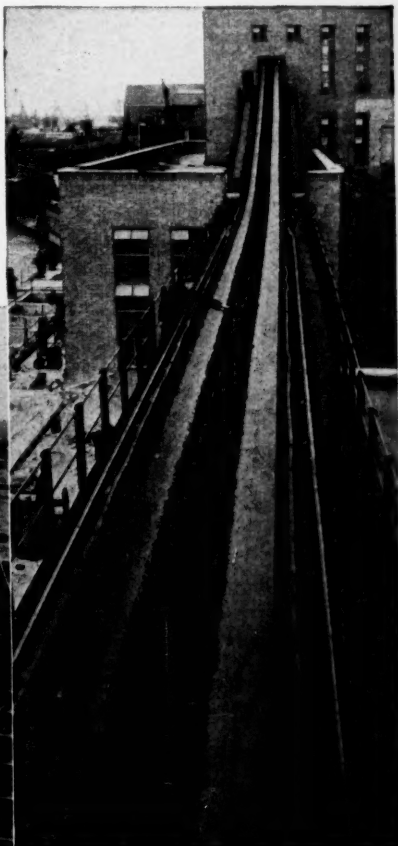
Total length of belting: 8,492' 9".

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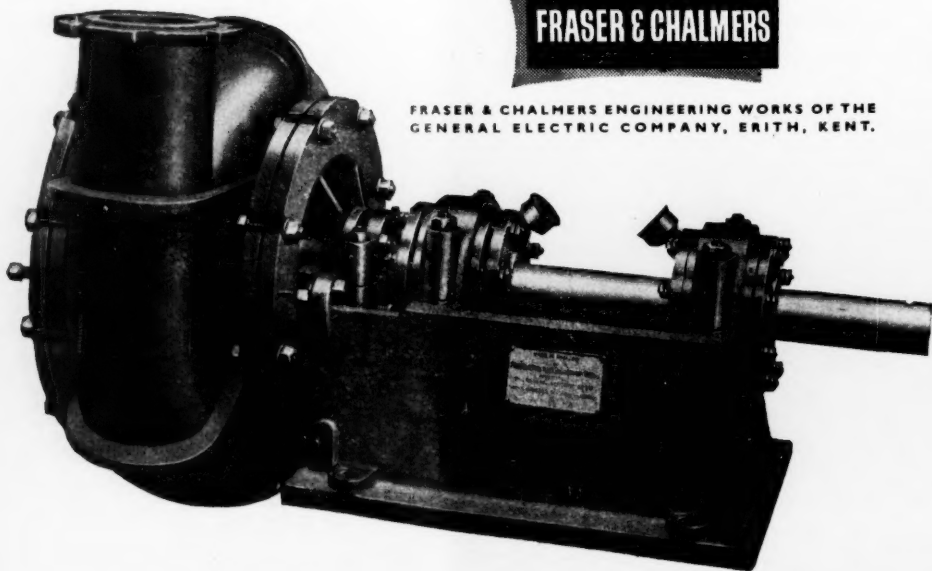
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The Mining Journal

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NOTES AND COMMENTS

The Twilight of New Zealand Metal Mining

The Report of the New Zealand Minister of Mines, the Hon. W. Sullivan, on the Dominion Mining Industry for 1951 presented to Parliament earlier this year is a valedictory of New Zealand metal mining—at least of gold mining—for so many years the backbone of mining activity in this antipodean field. Ever since the report to the Government on this Hauraki peninsula by the Canadian geologists, McIntosh, Bell and Colin Campbell just before World War I, the handwriting on the wall has been increasingly plain to view. The Waihi mine—the Martha of its earliest and latest stages of existence and at that time one of the greatest gold mines in the world—was found not to carry payable values below some 850 ft. in depth and though lateral development and persistent effort enabled it to maintain an increasingly desperate struggle against Union and Government extortion for another 40 years, the end came at the end of last year. The collapse of the South Shaft at the Blackwater Mine on July 9 had previously closed the only other lode mine in the country, and the Minister of Mines can only record that quartz mining for gold can now be regarded as extinct. There remains the gold dredging industry, of which in 1939-1940 the then Minister of Mines, Mr. P. C. Webb, spoke so enthusiastically, but the life of low grade alluvials, especially in an industry which was the first to develop the practice of gold dredging is naturally limited, and at the end of the year the nine concerns operating in 1950 had been reduced to six, hampered by depleted payable ground, worn out or obsolescent plant, the fixed price of gold and crippling taxation, so that dredge production of gold "must gradually diminish."

The total gold output for 1951 is "estimated at 75,115 crude oz. compared with 76,527 in 1950 and a record in 1871 of 730,029 oz. exported. Of last year's total dredges contributed 50,059, lode mines 23,615 and alluvial mines 1,441 oz.

Naturally in this period of unprecedented high metal prices and the classification of so many minerals in the "critical" category there was a fresh impulse to prospecting but there was little success forthcoming and production of

almost all minerals and metals was lower. Asbestos perhaps gave most promise. Working in the Upper Takaka Valley, West Coast district, Humes Ltd. treated 7,018 tons of serpentine rock for a recovery of 813 tons of short fibre asbestos which with the addition of imported long fibre can be used in asbestos cement products; 1950 output was only 41 tons. The enormous increase in the price of tungsten concentrates stimulated activity in the Glenorchy district and elsewhere in the South Island; production, however, was slight at 32 tons of scheelite. Incidentally, prospectors recovered 1.4 cwt. of tin near Port Pegasus in Stewart Island. Bentonite was one of the few minerals produced to show an increase, the workings are in the North Island at Porangahau and Mangatu, near Gisborne. The output was 430 tons against 289 in the year previous.

The sulphur shortage scare stimulated interest in that mineral: a disseminated pyrite deposit with extensive surface showing was discovered in the Thames district; sampling gave 7 per cent S. over a width of 300 ft. Interest in the low grade deposit near Lake Taupo was also quickened. The Cloudesley Mine, Pakotai shipped a second parcel of 175 tons assaying 10½ per cent Cu., besides 1.66 oz. of silver and 0.22 oz. gold, per ton to Port Kembla. The Auckland Smelting Co. is prospecting the sulphide ores of Te Aroha looking for workable quantities of the base metals: the Dominion laboratory is co-operating as it has done in connection with zinc samples from Fiji. Serpentine output increased from 45,174 to 91,976 tons. It is consumed locally in the manufacture of serpentine superphosphate.

The chief geologist of the Atomic Energy Commission of the Geological Survey of Great Britain examined West Coast alluvials containing small amounts of uranium minerals and confirmed earlier opinions that they were too low grade to be economic.

U.K. Steel Industry's Resounding Achievement

The expansion of steel production last month to the record annual rate of 17,951,000 tons is a resounding achievement, all the more gratifying because it indicates that the problem of providing the requisite increase in the supply of raw materials has been successfully overcome. The record steel outputs of 1950 were only achieved by the

use of enormous tonnages of German scrap which are no longer available. In the meantime there has been a concentration of effort to expand pig iron production. New blast furnaces have been built; others are nearly ready for operation and with ampler supplies of pig iron available the steel industry is pressing on to still more spectacular achievements.

Of course it will take a little time to overcome the shortage of steel which has been such an embarrassment throughout the whole of the past year, but progressive improvement is now assured. Home allocations for the first quarter of 1953 have been increased and the Board of Trade is increasing the export quotas for the first half of next year.

It is true that competition in the world markets is becoming keener and the aggregate British exports of steel this year will fall short of the figures for 1951. But the shrinkage has been mainly due to the barriers which have been thrown athwart the main arteries of international trade. There is still a world wide buyer for steel, and British steel prices in general are lower than the quotations of most of our competitors. To this broad generalization there is one exception, Belgian merchant bars are still offered at less than the fixed minimum figure for British bars, but users of all other rolled steel products find that it pays to "buy British."

U.K. Grasps Newfoundland-Labrador Opportunity

Plans for the development of the vast mineral and power potentialities of Labrador and Newfoundland—the tenth province of the Canadian dominion—have progressed rapidly since the "challenge" of the Premier, Mr. Joseph Smallwood, to British industrialists was uttered at an F.B.I. meeting in August last, as reported in our issue of August 29. The response was immediate and, as recorded in *The Mining Journal* of October 10 last, Messrs. N. M. Rothschild & Sons a few weeks later announced that the Anglo American Corporation, The Anglo-Newfoundland Development Co., Bowaters Newfoundland Pulp & Paper Mills, The English Electric Co., Frobisher Ltd., and the Rio Tinto Co. have formed a syndicate to report on the possibilities of utilizing Labrador's resources.

Thereafter, Mr. Smallwood, who is himself chairman of the Newfoundland & Labrador Development Corporation, sent a technical mission to Labrador to investigate prospects. After this, Mr. Smallwood flew to London on December 2 last to finalize the position and since his return home last week has announced the consummation of "the biggest real estate deal taking place on the American continent." Full details are to be announced as soon as the concurrence and support of his cabinet colleagues is secured.

Dr. J. A. Bancroft, the Canadian geologist, whose work contributed so signally to the successful proving of the copper resources of Northern Rhodesia, will assist the syndicate when prospecting starts in earnest next spring.

Hitherto, United States firms, more particularly the National Lead, the American Zinc, Lead & Smelting Co., Newmont, Reynolds, and of course the big iron and steel interests have been mainly in the picture. So far the principal minerals worked are iron, copper, lead, zinc, limestone, gypsum and fluorspar. Preliminary estimates by government survey estimate the hydro-electric power available in Labrador at 5,000,000 h.p. and in Newfoundland 500,000 h.p.

In all, the scope of the project appears the greatest yet conceived for British mining enterprise on the North American continent. Mr. Smallwood stated that the syndicate would receive the support of the British Government in meeting exchange and currency obstacles.

Australia

(From Our Own Correspondent)

Melbourne, November 29.

Competent opinion gives important prospects to the Mount Isa Mines in North Queensland. This view is based not only on the disclosed and prospective resources of the lead lodes now being worked, and on the large copper lode in which production will be commenced about March next, but also on the prospects being disclosed in the silver-lead deposits now being investigated 12 miles north of the main group of mines. Exploration is still in the early stages. The field is reasonably extensive and future plans will depend on the volume of ore available. So far as exploratory work has gone the ore appears to be of lower grade than that being worked at Mount Isa mines, in the Black Star ore body, which is the main occurrence of lead-zinc ore. The copper smelter and concentrating plant are expected to be in operation by March, when Mount Isa will become a leader in Australian copper production.

MOUNT LYLELL

Mount Lyell Mining & Railway Co., Tasmania, has reported a good year, with a profit of £A.338,502, an increase of £A.142,673 over the previous year's figures. Taxation amounted to £A.110,125, and depreciation to £A.66,794. The output of copper for the year was increased to 9,048 tons from the previous output of 6,990 tons, recovered from a lower tonnage of ore. Increase in the fixed price of copper by £A.120 to £A.350 per ton has had a very important influence on the company's financial position. It is, however, of the greatest importance, and not only to Mount Lyell, that the price of copper is maintained, or at least, that there is no serious decline, for the end of the steady rise in costs cannot yet be seen. The one hopeful sign in this direction is that more labour is becoming available, and that men are looking for work. This points to a better supply and to greater stability through lower labour turnover. The company is pressing on with plans for greater production, and at the same time exploration is to be extended into neighbouring areas to the southward. Mount Lyell is an important producer of pyritic concentrate, an important tonnage of which is shipped to the mainland for use in superphosphate manufacture. Deliveries have been rather badly restricted by shortage of shipping. The company is preparing to expedite delivery of pyrite by increasing the carrying capacity of its railway to the port of Strahan, and by the construction of new jetty facilities.

SOUTH AUSTRALIAN PYRITE

Work is well advanced in preparation for production of pyrite at the large deposit at Nairne, in the hills behind Adelaide. This work is being undertaken by the several acid and superphosphate manufacturing companies in South Australia, together with the Broken Hill Proprietary Co., under whose control operations will be carried out. It has been stated that by the middle of 1954 the Nairne mine, together with the Smelters of Broken Hill Associated Smelters at Port Pirie, will be producing enough pyrite concentrate to meet all South Australia's requirements for the manufacture of superphosphate. For the manufacture of acid from the Nairne mine concentrate, a plant is being erected at Port Adelaide, but it is thought that the mine and concentrating plant at Nairne will be producing before the acid plant is ready to take the concentrate. Development to date has proved about 30,000,000 tons of pyrite within reasonable distance of the crushing plant. This is expected to produce some 3,000,000 tons of sulphur. Con-

centration will raise the grade of the pyrite from 10 per cent to 40 per cent sulphur.

WESTERN AUSTRALIAN GOLD MINING

Gold mines of Kalgoorlie have purchased the Paringa mine, recently worked by Paringa Mining & Exploration Co., together with the plant and stores. The price has been stated as £A.85,000 which is considered by local men to be cheap. The Paringa leases adjoin those of Gold Mines of Kalgoorlie, and are well situated for operation by that company. One of the operating companies at Kalgoorlie has been examining and sampling the White Hope mine, owned by Consolidated Gold Mining Areas. The mine is situated 26 miles south of Kalgoorlie, and has a nice ore body with a grade at the 550 ft. level of between 7 and 9 dwt. gold per ton. If satisfactory continuation of the lode is proved below that level, the property has the prospect of being one of the most attractive outside that centre. Should the hoped-for increase in the price of gold become fact, with a price commensurate with present working conditions, there should be marked stimulation in the gold mining industry in Australia, and particularly in Western Australia. That State's youngest gold mine, Great Western Consolidated, at Bullfinch, has commenced milling on three shifts. It is expected that the throughput will be about 20,000 tons a month at present, but will be increased to 30,000 or 40,000 tons ultimately.

TABLELAND TIN DREDGING

The company's dredge, which is stated to be the largest tin dredge in the Southern Hemisphere, is being moved from the old site at Return Creek to the new leases on Smith's Creek, nine miles away. Work is expected to be resumed about July of 1953 and the capacity of the dredge will be increased. The cost of the move will approximate £A.300,000. Total weight of the plant is 2,000 tons, and 1,300 tons have already been transported. The life of the new area is estimated at 12½ years and the expected rate of output is 800 tons of tin concentrate per year.

BROKEN HILL SOUTH

The Broken Hill South Co. will have a substantial increase in life from further exploration in its original leases, supplemented by remnant ore from the leases acquired from the old Broken Hill Proprietary Co., the Sulphide Corporation, and Broken Hill Block 10 Co. Of these leases, Blocks 8, 9, 10, 11, 12 and 13, Blocks 10, 11, 12 and 13 have been transferred to the South Co.'s subsidiary, Barrier Central Pty. Ltd. Considerable success has been achieved in opening up and developing the blocks of remnant ore left in these leases; this sulphide ore is treated in the Broken Hill South mill at the rate of 1,030 tons per wee. The working shaft will be the old Delprat shaft, which is being equipped with new winding engine and cages. The possibilities of an extension of the western leg of the main lode in Leases Nos. 8, 9 and 10 have been examined and the prospecting of the lode channel beyond the ends of the old stopes has advanced to the ore producing stage above the 500 ft. level in Leases Nos. 9 and 10, and on the 600 ft. and 700 ft. levels in Lease No. 8. Prospecting is in progress in Queensland, on two copper properties in the north-west of the State, and a lead-gold occurrence near Charters Towers is being examined; the latter prospect is stated to have shown encouraging results from surface prospecting. In New South Wales, the Conrad mine, near Inverell, has been unwatered and development is proceeding for opening up on a scale of 35,000 tons of ore per year. The ore is complex, consisting of galena, copper, tin, zinc, silver, and arsenopyrite. Length proved at surface is about 2,300 ft. Old reports give the length of the underground workings as over 1,250 ft. Width is from 3 ft. to 5 ft.

U.K. and the European Coal-Steel Community

(From Our Coal Correspondent)

In his address to the members of the High Authority of the European Coal and Steel Community at Luxembourg on November 17, Sir Hubert Houldsworth, Chairman of the National Coal Board, referred to the present position of Great Britain in relation to this organization. It will be recalled that this body was set up under the Schuman Plan to establish a super-national authority to control the production and distribution of coal and steel in Western Europe.

The member countries at present number six: France, West Germany, Belgium, the Netherlands, Italy and Luxembourg. Great Britain did not become a treaty member but it has since, in common with the United States, established a special liaison mission accredited to the community. This mission, which originally consisted of fifteen officials headed by Sir Cecil Weir, arrived at the present temporary headquarters of the High Authority in Luxembourg in September but it has now been strengthened by the addition of a representative of the National Coal Board and a representative of the National Union of Mine Workers.

ENTICEMENT FOR THE U.K.

At the meeting on November 17, M. Jean Monnet, President of the Community, placed at the disposal of the British delegates all the available information about the coal and steel industries of the six member countries in the hope that Great Britain would agree to a closer union with the Community without loss of sovereignty over the coal and steel industries within her own borders. The kind of alliance postulated by M. Monnet would make it possible to adopt common rules of action outside the present limited field of agreements on the allocation of European markets. The repudiation of differential prices for the home and export markets and the suppression of cartels have been mentioned as examples of the common actions that might be taken under such an alliance.

Sir Hubert Houldsworth opened his address by stating that Great Britain, as the largest producer of coal in Europe, is bound to be vitally interested in the shaping of the future of the coalfields of Western Europe. He then went on to say, in effect, that representatives of the British coal industry have for many years participated in international affairs connected with the coal trade, first under the League of Nations and then under the European Coal Organization which first met in London in 1945. This work was later transferred to the Coal Committee of the Economic Commission for Europe and certain aspects of it are being dealt with by the Coal Committee of O.E.E.C. Great Britain continues to work with both these committees on the investigation of the problems which still beset producers and consumers of coal in Western Europe.

IMMEDIATE ACTION REQUIRED AT MINISTERIAL LEVEL

The National Coal Board has delegated Sir Andrew Bryan, one of its full-time members, to assist these committees in Paris when the need arises. He was a member of the team of experts who recently examined the problem of reducing the need for importing large quantities of coal into Western Europe from the United States and elsewhere. Their report revealed a situation which called for immediate action at Ministerial level and Lord Leathers

attended the Ministerial conference on behalf of the British Government to discuss the measures which are to be taken to deal with this problem.

U.K. AND EUROPEAN PATTERNS SIMILAR

The National Coal Board are dealing with problems of production and distribution at home which, in magnitude and complexity, are comparable with those which confront the European Community. The British coalfields are widely separated geographically and mining conditions are extremely variable. Some of the largest divisions, such as the East Midlands and Yorkshire Divisions produce individually nearly as much coal as the whole of France. The National Coal Board's objectives in their Plan for Coal are similar in many respects to those set out in the European treaties. They aimed at getting rid of coal shortages both overall and of particular qualities but they also wanted to plan with great care to avoid any future possibility of local overproduction which would lead to the waste of resources and to the heavy social and moral costs of unemployment of the kind which were the besetting troubles of the coal industry in Great Britain and on the Continent during the inter-war years. They also had to plan carefully for the transfer of miners from the worked out areas to the new mining areas without causing hard-

ship to the miners' families and other people involved. All these and other problems are specifically mentioned in the European treaties, the main purpose of which is "to contribute to economic expansion, the development of employment and the improvement of the standard of living in the participating countries." Everyone engaged in the coal industry in Great Britain to-day subscribes wholeheartedly to these objectives.

THE N.C.B. MAKES A PROMISE

Looking to the future, Sir Hubert said that the use of energy is bound to increase as the standard of living rises. Between the wars the increase in the demand for energy was met largely by a great expansion in the use of oil but Europe's oil resources are now very limited and it is not expected that a similar increase in the consumption of oil, or indeed of energy from any other source will be practicable in the near future except from coal. This promises well for the expansion and prosperity of the coal industry during the next decade. He concluded by promising the full support of the National Coal Board to the European Coal and Steel Community towards the realization of their aims, by the exchange of information and, if necessary, by the delegation of more experts to the British Mission whenever they can be spared from urgent work at home.

Northern Rhodesia and Copper

A book published this week under the title of *Copper Venture* gives a fascinating and valuable sketch of the discovery and development of the copper deposits in Northern Rhodesia. The author, Mr. Kenneth Bradley, who has already written extensively on Northern Rhodesian affairs, is editor of the Colonial Service journal, *Corona*, and is director-designate of the Imperial Institute. *Copper Venture* is published by Roan Antelope Copper Mines Ltd., and Mufulira Copper Mines Ltd., and copies are obtainable from Walter E. Skinner, 20, Copthall Avenue, London, E.C.2, price 15s. net (or 16s. 3d. postage paid). The review which follows seeks to pick out some of the highlights of a book which will be widely read, at any rate in mining circles, although it has been impossible in the space to quote the names of more than a few of the mining financiers, engineers, prospectors and technologists, who have all contributed in some essential to the development of copper mining in and around the copperbelt, and whose achievements Mr. Bradley records.

Copper Venture describes one of the most striking, and economically important, developments in the history of British Colonial enterprise, even though, as the author observes, in the space available the half cannot be told us. The book puts on record at length a consecutive history of the country from pre-historic times through the adventurous history of the early Portuguese incursions and the development of the slave trade (which, incidentally, was responsible for most of the early export of copper won by native tribes), followed by the gradual pressure of European adventurers from the south and west, including the French, German and Portuguese convention to secure the whole of Central Africa for themselves. This project failed largely because of the vision and drive of Cecil Rhodes, through whose efforts was gradually developed the era of concessions, mainly for mineral prospecting, under the aegis of the Chartered Company.

This was followed after the end of the first world war by increasingly intensive prospecting, and subsequently by mine development, which forms so notable an epoch in the history of mining finance. To-day, this development is taking on an ever increasing Anglo-American character and has already resulted in advancing Northern Rhodesia to third place among the copper producing countries of the world and may eventually place her still higher up the scale.

EXTRAORDINARY PROGRESS IN RECENT YEARS

In recent years progress has made extraordinary strides. The output of the four great producing mines over the past twenty years is sufficiently indicated by a citation of the figures—16,691 tons in 1931; 228,254 tons in 1941; and 309,142 tons last year. Such exceptional gains have changed

the whole political and social outlook of the territory which, from having a population of less than 100 Europeans and some African villagers in the Ndola area in 1921, showed last year 19,964 Europeans and 87,237 Africans employed on the mines. Moreover, the total white population was 37,221 last year as compared with 3,634 in 1921, which shows the influence which successful mines can exercise on the economy of a whole territory.

Increase in the value of Government revenue is outstanding, the budget for 1952 is £23,500,000 as against £279,104 thirty years earlier. As Mr. Bradley observes, "It has not been sufficiently publicized that such success as Great Britain has achieved in closing the dollar gap has been due far more to the economic efforts of our colonies and the rise in the world prices of their raw materials than to the increase of productivity in Britain itself." To copper we might add gold, rubber, tin and other metals.

IMPORTANT PART PLAYED BY NATIVE TRIBES

The author brings out, in a way which has not been publicly appreciated, the important part played in the history of the Territory by various native tribes mining and smelting the malachite ores from a remote period. At one time the native miners in Central Africa were giving a production running into hundreds of tons a year. Copper—raw or in fabricated forms—was, in fact, the generally accepted currency among both natives, traders and slave dealers. The author mentions that Zimbabwe and other ancient sites in Mashonaland, which do not date earlier than the 14th century, have yielded evidences of copper "crosses," the usual currency emanating from the Katanga workings—Katanga being the native word for copper.

Incidentally, Mr. Bradley mentions that as early as the

end of the 16th century two Portuguese traders, Batista and José made what was probably the first crossing of the African continent from Angola to Moçambique, thus anticipating by more than two centuries the explorations of Livingstone and Stanley.

With the final suppression by Great Britain of the west coast slave trade about the middle of the last century, the export of copper produced by the natives of the Katanga area practically ceased, but the knowledge of copper deposits somewhere in the interior had penetrated to Europe and helped to inspire the imagination of Cecil Rhodes who charged two of his lieutenants, Harry Johnstone and Alfred Sharp, to penetrate Northern Rhodesia and particularly to reach the unclaimed area of Katanga and make a treaty with the leading chief Msiri. Owing to a chapter of accidents contact was not made with Msiri, and a Belgian expedition in 1891 penetrated to the Katanga, shot Msiri, and took possession of the country in the name of the Congo Free State. Ten years later the Government of North-Eastern Rhodesia was established by Order-in-Council and in 1899 an agreement was reached with Lewonika which was followed by an Order-in-Council ratifying an agreement giving the Chartered Company prospecting and mining rights over his whole territory including Barotseland-North-Western Rhodesia.

After this interest shifted to the Belgian Katanga Pedicle where Sir Robert Williams became fascinated by Grey's discovery of the Star of the Congo, a deposit of almost unbelievably rich malachite ore. Sir Robert Williams had an agreement with King Leopold II for a 40 per cent interest, later transferred to the Tanganyika Concessions, in the Union Minière de Haute-Katanga, formed in 1906, and in the Lobito railway, the possibilities of which are only now being fully realized.

The oxidized ores of Katanga were not readily treatable but their extreme richness proved too strong a magnet for mining finance promotion. Meanwhile, various copper discoveries continued to be reported from Northern Rhodesia and the location of what eventually became the great copper mines of the territory proceeded.

CHESTER BEATTY LED THE WAY

So far, however, little in the way of primary deposits of copper ore had been revealed and it was largely the experience of Mr. Chester Beatty in proving the large low-grade copper deposits of the U.S. including Utah, Nevada Con., Ray, and Chino which led him to hope that at depth the oxidized ores would give place to sulphides. Bwana Mkubwa attracted Mr. Beatty's attention, and his company, the Selection Trust, acquired an interest in the mine. A full-scale plant was designed by Mr. Perkins to treat its rich oxidized ores but proved a complete failure owing to the reaction of the gelatinous silica on the filter plant and a small syndicate, Copper Ventures Ltd., was formed by Mr. Beatty, Mr. P. K. Horner and Capt. Walter Broadbridge to prospect the Nkana concession—afterwards floated as the Rhodesian Congo Border Concession.

Mr. R. J. Parker, afterwards associated with Mr. Arthur D. Storke in the management of Roan Antelope, was sent in to make a preliminary inspection of the Roan Antelope and Rietbok claims and other prospects and in 1925 recommended a programme of shaft sinking associated later on with a drilling programme. The first core showed a width of 36½ ft. of sulphide ore averaging 3.87 per cent copper in the form of chalcocite at about 500 ft.

This immediately stimulated copper development throughout the area and it was realized that if the Nkana, Mufulira, Nchanga and other outcrops were found to overlie great sulphide deposits, Cecil Rhodes' dreams—despite the loss of the Katanga—might yet be realized as, if sufficient reserves of sulphides could be proved, they would be

much cheaper to treat than the Katanga oxides had ever been, since they were readily adaptable to simple concentration by flotation. In November 1926, Mr. Chester Beatty secured for the Selection Trust from Sir Edmund Davis the right to prospect the remainder of the Nkana concession and so with Sir Edmund retaining a third contributory interest in the business, the important holding of the Rhokana Corporation in the Mufulira and other mines was provided.

In March 1928, the first drill at Mufulira showed a width of 20.7 ft. of sulphides averaging 9.49 per cent copper at a depth of 300 ft. Drilling at Chambishi eventually proved 25,000,000 tons of ore averaging 3.46 per cent copper, but this mine has not yet been developed.

AMERICAN METAL CO. AIDS ROAN

By 1931, 108,000,000 tons of ore had been indicated at Roan Antelope and 162,000,000 tons going 4.14 per cent copper at Mufulira. About this time the great American slump hit the copper market, prices falling at one time to something like 4c. per lb. and leading to the world copper output restriction scheme which was in force until October, 1937. The American Metal Co., whose Vice-president, Dr. Otto Sussman, had visited Roan in 1927, came to the rescue by agreeing to smelt the Roan concentrates in its New Jersey plant and pay for them as soon as they were on truck on the Roan sidings and, as a result, Roan weathered the storm and paid its first dividend in 1935. But these adversities retarded the development of the copperbelt mines, despite which between 1932 and 1952 Roan Antelope and Mufulira produced 2,400,000 tons of blister copper, and as we have seen the big drain on reserves due to the second world war has been successfully met with production now over 300,000 tons p.a.

Far from being the end of what we may expect from the copperbelt country, Mufulira has formed a company recently, Chibuluma Mines Ltd., to develop a new mine on the property, towards which the E.C.A. has advanced £3,000,000, with an estimated output of 16,000 tons of copper and 500,000 lb. of cobalt yearly. Incidentally, Roan was for a considerable period believed to hold an advantageous position vis-a-vis most of the other copper producers in containing little or no cobalt in its ore. Later, however, it was recognized that with the great growth in world demand and frequent advance in prices the presence of cobalt was an advantageous and not an adverse factor in the economic position. However, confining himself as he does mainly to Roan and Mufulira, this aspect of the economy of the area is not developed by the author.

SEARCH FOR NEW COPPER FIELDS

Besides the Chibuluma Mines, four new prospecting companies have been formed with Mufulira and Roan Antelope as their chief shareholders. They are the Kadola Mines Ltd., The Luapula Mines Ltd., The Mwinilunga Mines Ltd., and The Chisangwa Mines Ltd., covering some 30,000 sq. miles of undeveloped country. Moreover, a new company has been formed to prospect for sulphides underlying the oxidized ore bodies of the Kansanshi Mine, where though some 4,000,000 tons of oxidized ore were proved between 1908 and 1914 averaging 3.65 per cent copper only 2,800 tons of copper have been produced, and Kansanshi is not the only deposit known and left sleeping in the bush of Central Africa, which may be activated later.

Once again prospecting teams are starting into the forest, the bush and the long empty vleis or dambos of the Congo-Zambesi watershed. The result is a striking similarity between the circumstances of to-day and those of twenty years ago. Once more the search for new copper fields is on, and we can hardly believe that some new mines will not result.

Air Survey Methods in Mineral Exploration and Development

By P. A. RANKIN

The development of the free world's natural resources has become one of the most critical questions of policy facing governments to-day. In a lengthy article, Mr. Rankin, who is Chief Geologist of Hunting Aerosurveys Ltd., and Hunting Geophysics Ltd., London, clearly describes how air survey methods can help materially in speeding the surveying necessary right up to the production stage. His article is restricted to a consideration of surveying applied to mineral development, but the other uses of air survey from the broader viewpoint of all natural resources under or in the ground are also mentioned. In the first portion of his article which follows, he explains the technical processes involved in the production of topographic, geological, geophysical forestry and soil maps, and concludes by briefly mentioning the detail possible from photographs.

Mr. Nader was the first to attempt photography from the air in 1858 using a balloon above Paris.

By 1914, the aerial photograph was recognized as a useful map for intelligence in war time. During the first world war, Williamsons produced the first semi-automatic aerial camera to the requirement of Col. J. T. C. Brabazon (now Lord Brabazon).

In 1919, Aerofilms Ltd. sent the first Air Survey Expedition to photograph the Orinoco Delta.

In the United States, "photomosaics" were the first product of air survey. In 1920 Fairchild Aerial Camera Corp. made a mosaic of New York, and later the Aero Service Corp. produced a mosaic of Philadelphia.

Gradually, optical equipment for the new science of photogrammetry—based on the principle of stereoscopic vision—was developed, and resulted in such intricate machines as the Wild A.5 Autograph a few years before the second world war. The accuracy that can be achieved by such very precise instruments is very great indeed. From photographs taken at a flying height of 5,000 ft. above the ground, it is possible to contour at intervals of five ft. with an allowable tolerance of only 2½ ft. The order of accuracy of spot levels may be from 1-2 ft.

During the second world war, continuous photographic cover was flown by units of the allied air forces and many advances were made in the uses of aerial photography in making topographic and planimetric maps, but it was not till after the war that other uses for photographs were developed. Aerial photographs are now used extensively by mining houses, oil companies, consultants and government survey departments to produce geological maps, and, by those interested in vegetation, to produce forestry, ecological and soil maps.

The aircraft has proved to be a suitable travelling platform for the camera, and it is not surprising that it is now being used for geophysical and special altimeter instruments. For example, by adapting the "airborne submarine detector" of the war, an instrument capable of detecting changes in the earth's magnetic field to fine sensitivity has been developed. Geiger-Muller counters for detecting radioactivity were flown in aircraft until it was found that the "scintillometer" or "scintillation counter" was more sensitive. Electromagnetic prospecting instruments are now airborne and some radio methods for geophysics exploration are being investigated. The radar altimeter principle has been used to produce the airborne profile recorder; an instrument capable of recording a height profile, accurate to 10 ft. under favourable conditions between known heights miles apart.

Although much information can be obtained from aerial photography and geophysics, ground surveying in a restricted form plays an important part in the production of a final map. To produce topographic maps, a close grid of points, whose positions and heights on the ground are known, is necessary. Ground survey parties generally give this "control" information. However, where the "going" is impossible, the Airborne Profile Recorder can supply enough information to produce 50 ft. contours. To produce

final geological, soil, ecological and forestry maps, ground parties must usually go into the field to check and augment the information from air survey records.

Whilst aerial survey, photographic or geophysical, is best suited to mapping large areas, it has its uses for detailed studies of small areas as is demonstrated later in this article.

THE COST OF SURVEYING

One of the major cost items of a survey is the transporting of men and aerial equipment to the survey area. Naturally the proportion this bears to the overall cost diminishes with the size of the area. Where small areas are contemplated, the most obvious way to overcome this cost is to arrange for the job to be flown *en route* to a larger job or in conjunction with other small jobs in the same general area.

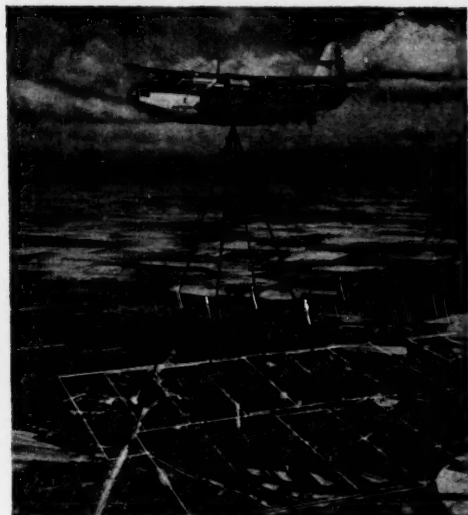
With matters aerial, weather is an important factor. Costs come down appreciably if a survey is planned for the best flying season, when the speed of aerial surveying can best be appreciated.

It is not readily realized that aerial photographs may be used for a multitude of purposes. They do not cease to be of use when the job for which they were flown is over. By using the correct flying height, filters and lenses, photographs flown at a useful scale for say planimetric purposes may later be used for contouring, geology, forestry, soil surveys, siting roads, railways, transmission lines, etc. The photograph is a permanent record which can be used time and time again. Thus their initial cost may be spread over a number of projects on a well-planned survey.

PHOTOGRAPHY

Photographic cover is obtained by flying a camera over the ground in parallel traverses. The height of the aircraft above the mean ground level, the camera characteristics, (such as lens, focal length, filter and speed of film shutter), and the time interval between exposures necessary to obtain a 60 per cent overlap of successive exposure are all decided beforehand. Positioning the aircraft is accomplished on the best existing maps which, though often very sketchy and inaccurate, are still sufficient for experienced crews. Recourse to radar positioning is only made where absolutely necessary, because of high cost of installation.

Suitable cameras for this work are manufactured by Williamsons of England, Wild of Switzerland and Zeiss and Fairchild's of the U.S.A., amongst others. They employ roll film or plates, and are designed for rapid exposure interval, fine definition and good control of distortion. Whilst some companies use plate cameras, it has been found that properly processed roll film, if reproduced on glass within three months of exposure, loses little in accuracy. Such film has been successfully used to produce 40 ft. to the 1 in. maps, and is easier to handle than plates in the air. Exposed film is developed on site, and trial prints are produced. These prints are fitted to each other to see if there are any gaps in photography occasioned by cloud or difficulties of navigation. Such a mosaic produced is called a "gap mosaic," "rough laydown" or "index



This illustration shows how coverage of an area is obtained. A 60 per cent longitudinal and 30 per cent latitudinal overlap are required. The aircraft is the Percival Survey Prince

mosaic." These in themselves are often adequate for obtaining, for example, the regional geological picture.

MAPPING FROM PHOTOGRAPHS

There are many types of maps which may be produced from aerial photographs—vertical or oblique.

Mosaic.—A mosaic is a photo-map produced by fitting together successive photographs and photographing the complete "laydown" so produced. Generally, it involves using vertical photographs. Such a mosaic may be "controlled" to existing ground triangulation, or "uncontrolled."

Despite advances in technique it is not yet possible to produce a perfect photographic record (of the ground) true in all respects, from the air. Limiting factors are the characteristics of the camera lens and the inability to maintain a camera pointing vertically downwards. The first factor causes distortion around the edge of each photograph, whilst the second causes scale changes and distortion across the photograph by virtue of its being produced from a tilted camera. Tilts are kept to well within 2° by experienced crews and such errors may be rectified during the production of a mosaic. Another limiting factor is due to height differences of the ground flown over. Objects nearer the camera appear on the photographs at a larger scale than those further away.

For these reasons no photo "mosaic" can ever be called an accurate map. It cannot be produced without scale variations across it. However, it is a very useful and cheap method of reproducing ground features, for it shows minute detail which is never translated on a line map, and, from the point of view of the field man, the scale variations are unimportant. Any feature he wishes to find can be readily fixed by reference to nearby obvious features and the scale change over short distances is small.

We can see that an "uncontrolled mosaic" is subject to scale change, duplication and omission of detail at photograph edges, and positional distortion in that it is not controlled to ground survey stations. In order to overcome this latter, a "controlled" mosaic may be produced. This usually involves the "slotted template" technique.

The slotted template technique is based on the assumption that angular measurements taken from the centre point of the photograph are true. Known ground control

stations are identified and marked on the photographs and subsidiary points (minor control points) common to each photograph and its neighbours are also selected and marked. A sheet of transparent material representing each photograph is slotted in a special cutting device from photo centre point to each ground and minor control point. These transparent "overlays" are then fitted together and made to fit the ground control points laid out on a special floor or board in their correct geographic positions. Small studs fitting the slots hold each overlay to its neighbours and these studs take up their correct position relative to the known ground control points by virtue of the geometry of the photographs. The positions of all the studs are then marked on the floor (or board) before the transparent overlays are removed. The result is a floor (or board) marked with a number of control points, all of which are identifiable on the photographs. Each photograph has four or more such "control" points and may be optically rectified to fit the points before being stuck down, for example, on a board on to which the "control" produced above has been plotted. This process of rectification is undertaken with each photograph until the board is covered with a mosaic of scaled photographs. This may then be photographed and any number of copies produced. Unlike the "uncontrolled mosaic" changes in scale, omissions and duplications of detail are reduced to an absolute minimum unless great variation in height of the terrain exists. Controlled mosaics, often referred to as "photo maps" may be used in many ways and are often considered more useful than the conventional map by virtue of the amount of detail it is possible to identify.

Planimetric maps produced from mosaics.—Planimetric maps are generally produced by employing the technique of the "slotted template" together with a graphical raying-in process. However, a cheap and rapid method can be used to great advantage when speed of production is the main consideration. This involves a simple tracing of detail from a controlled mosaic on to



The accompanying illustration shows templates being assembled

a suitable transparent overlay. Often used as a base map for plotting geophysical, geologic or vegetal data obtained by normal stereoscopic and ground investigation, it is an adequate map and its inaccuracies are outweighed by its simplicity and speed of production.

Planimetric maps produced from oblique photographs.—In order to increase the coverage possible from one aerial traverse, a method of photography called "trimetrogon" was extensively used during the war. This involved the use of three cameras, one mounted vertically, the other two pointing 45° down and to the side of the aircraft. From one line of flight a strip of vertical photography, bordered by oblique photography was produced. A further development involved the use of 5 and 9 lens assemblies. These instruments, of course, were valuable in war time where prolonged flights over enemy territory were dangerous and the requirement was for small scale air navigation maps, but in peace time, the problems of translating oblique photography into accurate large scale planimetric maps, the loss of definition at the extremes of the oblique photographs and the loss of cover in dead ground beyond hills and high objects, and the impossibility of contouring from oblique photography, has caused air survey organizations to give up this method.

Planimetric maps can, however, be produced from existing oblique photographs by using calculated geometric grids based on considerations of the angle at which the photos were taken and the geometry of the camera's optical system.

Accurate maps produced from photography.—Mention has been made of planimetric maps produced from mosaics and it has been stressed that they are adequate for the production of reconnaissance type maps at scales of the order of 1 in. to 1 mile, and high accuracies are obtainable using the "slotted template" technique. However, for more accurate maps, more involved methods are necessary. These make use of machines such as the Williamson S.P.3 (multiplex type), Wild autograph, Zeiss stereoplanigraph, and Kelsch plotters. The type and accuracy of the map to be produced dictates the instrument or combination of machines to be used. There are many variations on the multiplex and autograph machines but a discussion on the main types will enable the reader to appreciate the variations.

The Multiplex Type.—The simplest form of space plotter is the Williamson stereo Multiplex which one may picture as a row of projectors strung along a horizontal bar. Each projector may be considered to be a replica of the taking camera and, by rotation in three directions, can be made to assume a position identical with that of the camera in the aircraft at the moment of exposure. By means of coloured filters the images of alternate pictures along the strip are projected in red and blue. When viewed through spectacles of identical colours, each eye sees only one picture and stereoscopic impression is obtained of the earth's surface in miniature. Plotting of detail and contours in the Multiplex is carried out by means of a small movable "tracing table." The table itself can be raised or lowered vertically, and contains in its centre a pin-hole which is illuminated from below. The effect of this hole is to produce a point of light which appears to "float" in the stereoscopic image projected on the tracing table.

If the height of the tracing table is set by means of a micrometer screw to read the level of a particular contour then the floating mark can be made to follow the line of the contour which at the same time is traced by a pencil fixed immediately beneath the pin hole or floating mark. Similarly when objects of detail are traced, the floating mark is kept on the surface of the ground by adjusting the height of the table.

The Multiplex enables rapid and accurate plotting of topographical maps provided the contour interval is limited to a minimum of 10 ft. For larger scale mapping and

closer interval contouring it is necessary to use a more precise type of instrument, such as the Wild Stereo-autograph.

The Stereo-Autograph.—The basic principles of the Autograph are the same as those of the Multiplex, but in place of a projection system the paths of the light rays are reconstructed by mechanical rods and examination of the photographs takes place in a binocular system employing a very high degree of magnification.

Both the Multiplex and the Stereo-autograph can be used also for supplementing control points provided on the ground. In this way it is possible to "bridge" across distances from 10-15 miles with little or no assistance between from co-ordinated or heightened points on the ground.

The Parallax Bar.—This simple machine, working on the same principle as the larger machine, is very useful to the geologist for making estimates on dips of strata. It is small, easy to handle and operates on the overlap of two successive photographs seen in relief. It has a black dot which may be made to assume any height, and heights are read off on a micrometer scale.

Geological Uses of Photographs.—So much for topographic maps and their production. Let us now consider the uses of photographs and base maps in compiling geological maps.

The scale may be such that small detail is unnoticed even under X.6 magnification. This is rarely the case, as the scale of photography is limited by the ceiling of the aircraft and most general photography is produced at 1:20,000 to 1:40,000 scales. These are adequate for producing reasonably detailed geologic maps at 1 mile to 1 in. scale.

The season in which the photographs are exposed is important since vegetational cover or snow may obscure rock outcrops or mask vegetation variations.

The lens filter used is also important. The outcome of experiment in Ontario, Canada, and elsewhere is that spring photography, using panchromatic film with a red or minus blue filter is the best combination.

The great value of photographs, and more particularly mosaics, is that the geologist has before him the overall picture of the area in which he is interested. Geologic trends, outcrop areas and areas of interest economically can be distinguished often very readily by stereoscopic examination.

Photographs as Maps in the Field.—An individual photograph is in itself a photo-map. It depicts detail which is of use in positioning oneself in the field, if nothing else. The mosaic, even a rough laydown, will do the same. The value of mosaic or individual photographs as a map should not be overlooked.

Mosaics as Planning Maps.—A mosaic, even without stereoscopic study of its composite photos, indicates the nature of the country and, when interpreted in the office, reveals the traverses necessary for checking and extending the photo interpretation previously accomplished.

Photographs as Mathematical Documents.—Heights and distances may be measured on the aerial photograph. The most accurate angles and distances are those taken using the centre points (or "principal point" as it is called) of the photograph as, of course, one does in using the "slotted template" method of mapping. However, if care is used, the area of a photograph from its centre to within about 1 in. around its edge is sufficiently accurate for geological purposes.

DETAIL POSSIBLE FROM PHOTOGRAPHS

Where the country considered is desert and unobscured by sand, the "bare bones" of the country stand out well. Dips and strikes on individual beds may be estimated with experience or actually calculated, using a parallax bar and allowing for tilt of the photographs. It should be realized

that the vertical scale is always exaggerated, and this in itself, helps to discover small features and to determine dip slopes accurately.

Naturally, in this sort of country, faults, axes of folds, individual bed thicknesses and, to a great extent, rock types, are relatively easily interpreted. Each rock type has its own weathered texture, for instance. The junction between igneous masses and sediments is often easily seen, as is that between arenaceous and argillaceous contacts. If the photography covers areas of known geology, correlation of beds and their tracing across country is readily possible. Where outcrops are readily visible, fine distinctions of rock types may be made.

In vegetation covered areas, it is often remarkable how rock formations show themselves by distinctive vegetal types or density of vegetation. In these areas there is commonly a deep soil mantle produced by weathering of the rock beneath. Where this soil is residual, not transported, its characteristics may be of value in giving an indication of the rock beneath it. One, therefore, has vegetation type and density and soil type to aid in interpretation. Until colour photography becomes more common, interpretation is made by reference to tonal and texture values and pattern. All the natural colours show up as shades of grey. These tones, together with the "texture" of the ground, be it vegetation covered or bare, are the criteria

used. Lines of stratification, fissuring, fracturing, schistosity or faulting show up often by lines in the vegetation due to moisture content variations in the soil giving rise to variations in vegetal covering.

Naturally, in forest areas, dips cannot be calculated by measurements on dip slopes for example, but detailed work in Venezuela by Desjardins has shown that with experience, stratum contour maps may well be produced by stereoscopic means even in such difficult country.

A faculty can be acquired where tilt of a photograph can be adjusted to the extent that surface and stratum contour "form lines" can be drawn with high accuracy.

Oblique photographs may be taken individually or as stereoscopic pairs, so that it is possible to see the sides of hills, canyons, cliffs, etc., in relief. An oblique may be used as a map on which to plot geological information or may, as with a vertical, be used for interpretation.

Air photographs may be interpreted to give geological information often in great detail. By stereoscopic study, a map may be produced on which ground investigation may be planned and executed. Generally speaking, ground work is necessary before a complete geological map of an area can be produced, but the office interpretation stage serves to eliminate wasted effort by depicting areas of interest and saves many months of arduous traversing through bush and swamp or waterless desert.

Mining Companies of the Congo

Our Belgian correspondent has sent us a list of the active mining companies in the Congo and Ruanda-Urundi, which we believe will be of interest to many of our readers in view of the extensive mining activity which the Colony is experiencing. The particulars given below have in the main been taken from the *Repertoire du Congo Belge et du Ruanda-Urundi*, copies of which are available from the Colonial Attache at the Belgian Embassy.

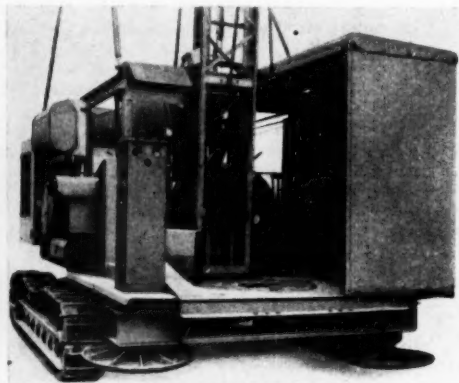
Name	Abbreviated Name	Capita. (Fcs.)	Minerals Mined	Address in Belgian Congo or Ruanda-Urundi	Address in Belgium
Beceka-Manganese	—	20,000,000	Manganese	Elisabethville	46, rue Royale, Brussels.
Charbonnage de la Luena	—	40,000,000	Coal	Elisabethville	10, rue Bréderode, Brussels.
Comité National du Kivu	C.N.K.I.	107,500,000	Gold, Tantalite, Tin	Costermanville	16, rue d'Égmont, Brussels.
Compagnie Belge d'Entreprises Minières	COBELMIN	5,000,000	Gold, Tin, Wolfram	Kindu	91, rue de l'Enseignement, Brussels.
Compagnie de Recherches et d'Exploita- tions Minières au Ruanda-Urundi ...	COREM	15,000,000	Gold, Tin	Usumbura, Ruanda-Urundi	28, rue du Trône, Brussels.
Compagnie des Mines d'Étain et de la Belgia	BELGICAIRAIN	20,000,000	Gold, Tin	Stanleyville	121, rue du Commerce, Brussels.
Compagnie Géologique et Minière des Ingénieurs et Industriels Belges	GEOMINES	200,000,000	Coal, Tantalite, Tin	Manono	5, rue du Trône, Brussels.
Compagnie Géologique et Minière du Ruanda-Urundi	GEORUNDA	150,000,000	Gold, Tin	Rwinkwavu, Kigali, Ruanda-Urundi	5, rue du Trône, Brussels.
Compagnie Minière au Ruanda-Urundi ...	MIRUDI	6,000,000	Gold, Tin, Wolfram	Usumbura, Ruanda-Urundi	24, avenue de l'Astronomie, Brussels.
Compagnie Minière de l'Urega	MINERGA	10,000,000	Columbite, Gold, Tantalite, Tin, Wolfram	Goma	24, avenue de l'Astronomie, Brussels.
Compagnie Minière des Grands Lacs Africains	MILACS	20,000,000	Columbite, Gold, Tantalite, Tin, Wolfram	Léopoldville	2, rue Montagne du Parc, Brussels.
Compagnie Minière du Congo Belge ...	MINCOBEL	22,200,000	Gold, Tin	Goma	24, avenue de l'Astronomie, Brussels.
Compagnie Minière du Nord de l'Ituri ...	COMINOR	10,000,000	Gold, Tin	Usumbura, Ruanda-Urundi	42, rue Royale, Brussels.
Compagnie Minière en Afrique Orientale	MINAFOR	4,100,000	Gold, Tin	Kindu	121, rue Royale, Brussels.
Les Mines d'Or et d'Étain de Kindu ...	KINORÉTAIRAIN	60,000,000	Gold, Tin	Stanleyville	42, rue du Commerce, Brussels.
Mines d'Or Belgica	BELGICAIR	78,800,000	Gold, Tin	Elisabethville	6-8, rue Montagne du Parc, Brussels.
Société de Recherche Minière du Sud- Katanga	SUDKAT	46,000,000	Copper	Atridia, Ruanda-Urundi	42, rue Royale, Brussels.
Société des Mines d'Étain du Ruanda- Urundi	MINETAIR	56,500,000	Gold	Kilo and Moto	1, place de Luxembourg, Brussels.
Société des Mines d'Or Kilo-Moto	—	230,000,000	Iron ore, Lead, Tin	Mitwaba	48, rue de Namur, Brussels.
Société d'Exploitations et de Recherches Minières au Katanga	SERMIKAT	40,000,000	Diamonds, Gold	Tshikapa	42, rue Royale, Brussels.
Société Internationale Forestière et Minière du Congo	FORMINIERE	128,000,000	Gold, Tin	Stanleyville	2, rue Montagne du Parc, Brussels.
Société Minière Cololacs	COLOLACS	5,000,000	Gold, Tantalite, Tin	Stanleyville	41, rue Jean Stan, Brussels.
Société Minière de Bafwaboli	SOMIBA	29,200,000	Gold	Buta	41, rue de Naples, Brussels.
Société Minière de la Bili	SOMIBA	5,000,000	Gold	Manono	48, rue de Namur, Brussels.
Société Minière de l'Aruwimi-Ituri ...	SOMIKA	17,000,000	Gold, Tin	Leopoldville	112, rue du Commerce, Brussels.
Société Minière de Kamola	SYLUMA	10,000,000	Gold, Tin	Kigali, Ruanda-Urundi	34, avenue Rubens, Antwerp.
Société Minière de la Luama	SOMUKI	28,000,000	Gold, Tin	Stanleyville	121, rue du Commerce, Brussels.
Société Minière de Muhinga et de Kigali ...	—	10,000,000	Gold, Tin	Buta	42, rue Royale, Brussels.
Société Minière de Nyangwe	TELE	25,000,000	Gold, Tin	Goma	45, rue de Namur, Brussels.
Société Minière de la Tele	SOMINOR	10,000,000	Gold, Tin	Stanleyville	24, avenue de l'Astronomie, Brussels.
Société Minière du Congo Septentrional ...	MILUBA	15,000,000	Gold	Stanleyville	81, rue d'Arion, Brussels.
Société Minière du Lualaba	—	17,000,000	Gold, Tin	Léopoldville	112, rue du Commerce, Brussels.
Société Minière du Surongo	—	85,000,000	Cadmium, Cobalt, Copper, Gold, Uranium, Zinc	Elisabethville	6, rue Montagne du Parc, Brussels.
Symétain	—	—	—	—	—
Union Minière du Haut-Katanga	—	3,000,000,000	—	—	—

MACHINERY AND EQUIPMENT

Ruston-Bucyrus 42-RT Blast Hole Drill

The Ruston Bucyrus 42-RT Blast Hole Drill for 9 in. holes is, we understand, now available for quick delivery in the United Kingdom or for export.

This churn type drill rig is capable of drilling large diameter blast holes in the hardest rock formations and is available with either Diesel engine or electric motor drive. The weight of tools in drilling string is 4,350 lb., the drilling speed is 57 strokes per minute, and three variations in length of stroke are provided—46 in., 40 in. and 31 in.



The Ruston-Bucyrus 42-RT Blast Hole Drill

A feature of the machine is that the steel wire drilling line passes over a rubber cushioned shock absorber sheave at derrick head and that the spudding beam and heel sheaves are also rubber cushioned. The power driven tool wrench is standard equipment.

Brief specifications of the 42-RT which is already in extensive use in mines and quarries throughout the world are given below.

Caterpillar mounting—20 in. links.

Overall length—13 ft. 9 in.

Travel speed—8 m.p.h.

Height of derrick—46 ft. in extended position.

"Ruston" engine—horsepower 110 at 1,250 r.p.m.

Electric motor—40 horsepower continuous.

The pivoted front end axle provides three point suspension and allows considerable movement of the track units when travelling over uneven ground, without distorting the drill frame.

The rig has three hydraulic levelling jacks to stabilize the machine during drilling and these are operated from the driver's position.

A detailed descriptive specification may be obtained from the makers, Ruston-Bucyrus Ltd., on application.

Siskol Sawmaster Underground Steel Saw Unit

In every colliery and metal mine, quantities of scrap steel, girders, arches and other metal support units accumulate underground. These are often too heavily damaged to be straightened for re-use and are too distorted to allow for their easy transportation to surface.

Some time ago the manufacturers of Siskol Machines Ltd. recognized the need for a power unit to deal with this nuisance and proceeded to try and find a satisfactory answer.

The problem appeared at first a simple one, namely to instal a power hacksaw at a suitable point underground and to saw the scrap steel into lengths that could either be utilized or easily transported. Very soon, however, it was realized that the problem was not merely to cut the steel but to do every-

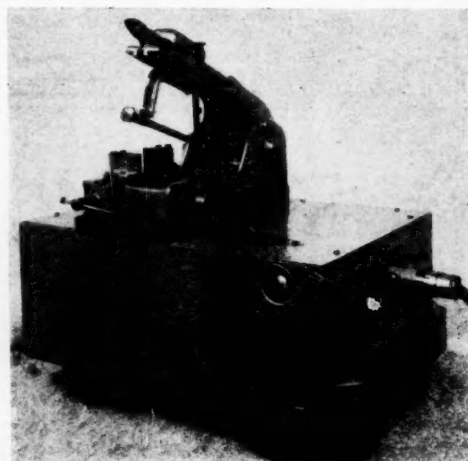
thing possible to ensure that the process did not add to the risks and hazards of mining. From the start the hacksaw was arranged to be driven by a 5 h.p. flameproof motor and the controlling switchgear, etc., were all in accordance with mining regulations.

To prevent development of frictional heat, a chain drive is used from the motor to the saw itself and to prevent overloading the drive operates through a dog tooth spring loaded slipping clutch mounted on the motor shaft.

There remained the danger of heat or sparks generated by the saw blade when cutting and careful attention was given to this problem. To ensure that the coolant supply is always directed on to the blade, it is brought through a fixed nozzle mounted on the frame of the saw and not through the ordinary flexible pipe found on most machine shop saws. Thus, so long as there is a supply of coolant this arrangement ensures that it reaches the right place.

It was, however, necessary to go further and make certain that there would always be a supply of coolant coming from this nozzle as long as the saw was in operation. To this end a mechanical interlock was incorporated between the weight of coolant in the supply tank and the push-pull switch controlling the motor. It is not possible to operate this switch so as to start up the motor unless there is sufficient coolant in the tank; and, moreover, if in operation the coolant falls below a certain point in the tank, the motor is automatically switched off and locked in the off position by a trip mechanism. The critical level of coolant in the tank is such that there is no question of the saw blade heating up before the motor is switched off.

The motor, drive mechanism, including clutch and chain drives, and the coolant safety mechanism are all enclosed in the body of the carriage on which the saw is mounted but are easily accessible on removal of inspection covers. The tank can be refilled in a matter of seconds.



The Siskol Sawmaster

The saw itself is the Sawmaster 6 in. Saw manufactured by Qualters & Smith Bros. Ltd., Barnsley. The saw frame is of rigid construction and runs in prismatic guides which ensure a square and parallel cut. Cutting takes place on the draw stroke and the blade is hydraulically lifted out of contact with the work on the forward stroke to prevent wear on the blade. Feed is regulated by means of an adjustable weight carried on the bow slide.

The whole unit, as shown in the accompanying illustration, is mounted so as to travel on the colliery rails and can be moved from place to place as occasion demands.

METALS, MINERALS AND ALLOYS

COPPER.—The past week or so has witnessed a certain amount of kite flying in the Press regarding the resumption of copper trading on the London Metal Exchange. It is, however, difficult to visualize a return to free trading so long as I.M.C. allocation continues, and news from Washington this week suggests allocation is to continue, at least for the first quarter of 1953. As the Ministry of Materials is under an obligation to give the producers six months notice of the discontinuance of bulk buying, and will presumably wish to see the outcome of the Copperbelt wage dispute before making any decision, it seems improbable that free dealings can be resumed before next autumn at the earliest.

Moreover, the Ministry must still have some doubts as to the effect of such a move on U.K. dollar earnings. While Rhodesian output is currently more than keeping pace with Britain's reduced consumption (and even with her normal consumption of around 30,000 tons per month), U.S. demand still causes the world situation to remain tight, and it could well be that with the best will in the world, the Metal Exchange would be unable to prevent some dollar losses through cheap sterling operations.

Finally, it still remains to be seen how far present slackness in European markets is a direct reflection of reduced consumption, and how far it is psychologically induced through the feeling that for one reason or another the U.S. price for foreign copper must be due for a fall. This element of uncertainty is implicit in last week's decision by the O.E.E.C. to suspend its list of prohibited end uses for copper rather than to cancel it, and in the accompanying announcement that "a close watch is being kept on the situation."

Following the request from U.S. consumers for an increased allocation of foreign metal (reported last week), the N.P.A. is now reported to have released a further 15,000 tons of foreign for December delivery. This presumably means a further delay in the rebuilding of the stockpile.

News of progress in two new South American ventures was released at the beginning of this month. At the end of November the first shipment of blister reached New York from the very large sulphide ore reserves in the open pit mine at Chuquicamata operated by Anaconda's subsidiary the Chile Exploration Co. The new sulphide treatment plant at Chuquicamata coupled with the existing oxide plant will have an eventual capacity of 250,000 tons per year. First electro copper from this new source (refined by the International Smelting and Refining in New Jersey) will be available, in February.

Satisfactory tests have decided the A.S. & R. to go ahead with the development of the large low-grade ore body of the Toquepala mine in Peru. The mine, which will be an open-cast proposition, has very large tonnages of a little better than one per cent, and is expected to rank in importance among the first ten copper mines in the world.

Further news of Rhokana's new Bancroft mine was given at this week's meeting of the former company. Capital cost of the new mine is estimated at about £11,000,000 spent over the next five years and the mine is to have a projected production rate of 50,000 tons per annum. At this rate of production the life of the proved ore reserves is expected to be around forty years although it is thought that further substantial reserves have yet to be proved.

The scale on which the world's big copper companies are laying their future plans—as indicated by the above news items—must in the long term be viewed against the background of the Paley Report's view of copper which forecasts a slightly decreasing U.S. domestic production over the next twenty-five years coupled with a demand which will need an approximate doubling of output from the rest of free world in the same period.

LEAD.—The latest shot in the campaign for higher tariffs for U.S. lead zinc producers comes from Mr. Wormser of St. Joseph Lead, who apparently effects to believe that because some of the American supply industries upon which mining depends are themselves protected or subsidized, this ought to go for the mines too. He also seems to view with alarm the suggestion of eventual international lead and zinc agreements,

although presumably for reasons other than those put forward in this column in recent weeks. Specifically, what he would like to see is the establishment of an "equalization tax" on lead and zinc imports, which would increase 1c. for every one cent fall in price up to a maximum of five cents over and above the existing import duties.

Both the New York and London markets have remained firm this week with the U.S. price unchanged at 14c., while on the Continent prices substantially above the London price have been asked for January shipment.

TIN.—At this distance it would appear as if R.F.C. officials are conducting a campaign of masterly inactivity in regard to the Bolivian tin negotiations. This attitude appears already to have yielded some slight dividend in the form of somewhat *empressé* assurances by the Bolivian ambassador in Washington that his Government "is very willing to consider compensation for Americans who have investments in tin mines taken over by the Bolivian Government." As only about 25 per cent of the capital in the nationalized tin mines is held in the States, compensation for American investors and for the companies *per se* may not necessarily mean the same thing to the Bolivian mind.

The Texas smelter output in November at 4,020 tons was the highest monthly total for a number of years and has gone some way to making up the deficiencies of the three months' strike period. Altogether, more tin has been produced in the three months since the strike ended than in the five months preceding the strike. It was reported in this column three weeks ago that the R.F.C. was understood to have acquired or contracted for enough concentrates to keep the smelter going for the next twelve months. This report gave no indication of the rate at which it was proposed to operate the smelter and this must now be a matter of some interest in view of the recent rise in output.

ZINC.—Both in Britain and in the States consumer stocks now appear to have been run down to a minimum working level preparation for the anticipated price slide when Metal Exchange dealings commence in three weeks' time. Consumer stocks in the U.K. at the end of October stood at about 9,000 tons or rather more than a fortnight's current consumption. Side by side with this, Government stocks increased a further 10 per cent during the month and at the beginning of November totalled 134,000 tons with another 28,000 tons held abroad or afloat. On the other hand, further indication that, with zinc at a more competitive price, consumption should pick up (see this column Nov. 28) is to be found in the increased primary metal consumption for October which amounted to 15,600 tons compared with 14,500 tons in September, 10,800 tons in August.

Smelters stocks in the States at the end of November showed a decline at 83,149 tons compared with 95,342 the month before, this being accounted for mainly by a corresponding increase in domestic shipments during the month—in itself an indication of the low level to which consumer stocks have fallen.

ALUMINIUM.—The Reynolds group has signed an agreement to take over the bauxite areas belonging to the Berbice Co. at Everton and at Kwakwani on the Berbice River in British Guiana. The vendor is the American Cynamid Co.

Alcoa is reported to have opened negotiations at the beginning of this month with the British Columbia Government regarding the proposed Alaska scheme which requires Canadian consent for the damming of the Yukon River near Whitehorse in order to provide hydro-electric power for the scheme.

Ingot production at the Bell Bay works of the Australian Aluminium Commission is expected to commence around the end of 1954. Although a stockpile of bauxite is available it may be necessary to bring in further supplies from abroad. Later on it is thought that it may be possible to exploit "very encouraging" domestic bauxite discoveries.

French aluminium production this year is forecast at 130,000 tons including 20,000 tons of secondary metal. Domestic consumption may not be more than 100,000 or perhaps 110,000 tons, leaving an exportable surplus, some of which has already

been placed with Belgium and Scandinavian and South American countries.

French producers, however, do not appear to regard next year's exports with undue optimism although domestic consumption is expected to increase. Even so, the possibility is apparently being discussed of establishing a new aluminium plant, based on French Guinea's rich bauxite deposits, provided that adequate power supplies can be assured. *The Mining Journal* readers will recall that Alcan recently started shipping bauxite from the Los Islands to Arvida.

CADMIUM.—The U.K. cadmium price reverted this week to its former level of 14s. 4d. after having been reduced last week to 10s. 9d. following a 25 per cent cut in the price quoted by one of the leading U.S. producers. This apparently has not been maintained.

COBALT.—The I.M.C. has announced that improved supplies will make the continued allocation of cobalt unnecessary in the first quarter of next year. The situation is, however, being kept under review. Cobalt production in the first quarter of next year by I.M.C. countries is estimated at 2,800 tonnes with further increases expected.

Meanwhile the D.P.A. has announced that the U.S. Defence Programme will require additional cobalt and now sets the U.S. annual requirement from foreign and domestic mines at 13,500 tons per annum against the earlier target of 10,500.

NICKEL.—The Ministry of Supply and Board of Trade announce licensing relaxations in the use of nickel silver in articles for export. Conversion values will in future be based on the value of the nickel content only of the nickel silver and should have the effect of permitting manufacturers to export a wider range of products. Relaxations are also announced in the licensing of nickel silver in Coronation souvenirs.

TITANIUM.—Canadian Government officials report that deposits of titanium have been found in Labrador and western Newfoundland.

A mixed columbite-tantalite ore deposit within 50 miles of Darwin, reported to be the biggest of its kind in the world, is to be mined shortly for sale to the aircraft industry. Drilling tests recently concluded at Bynoe Harbour were stated to be promising, while other deposits have been recorded at Finis River on the west arm of Darwin Harbour.

TUNGSTEN.—Unofficial reports from Washington suggest that allocation of tungsten by the I.M.C. may be abandoned after the end of this year.

PLATINUM.—Mr. Kenneth Richardson told the shareholders of Potgietersrust Platinums at the recent annual meeting in Johannesburg that steady progress was being made in enlarging the mill which now had a capacity of 110,000 tons, which should be further increased to between 115,000 and 120,000 tons by next April. This compares with a capacity of 70,000 tons two years earlier. The furnace capacity of the smelter was now up to the output of concentrates. As regards treatment of the matte the South African section of the treatment plant might be ready towards the second half of 1954. Meanwhile, the Brimsdown works of Messrs. Johnson Matthey & Co. are handling all the matte produced and any excess output from the mill is going to stockpile.

The London Metal Market

(From Our Metal Exchange Correspondent)

There is nothing of interest to report in respect of the tin market this week, which has been steady, and very little movement in prices has occurred. Stocks of tin in Metal Exchange warehouses showed a further moderate increase, and the back-wardation has remained at around £5 per ton. In the East demand has continued good at steady prices, the bulk of the buying there being probably for account of private importers in the United States of America.

The Eastern price on Thursday morning was equivalent to £961 per ton c.i.f. Europe. On Thursday afternoon the London market was easier.

A fairly good demand has developed for prompt lead which now commands a substantial premium over the price for current month settlement. Government sales of prompt metal

in total have only amounted to a modest tonnage during the week. On the whole the market has been firm and producers have shown no anxiety to sell here, and indeed have occasionally been inclined to support the market. With the approach of the Christmas holiday it is not expected that business with consumers will be very brisk. On Thursday afternoon the market was firm.

The copper market in America seems to continue active, whilst in Europe dull conditions prevail. The hope has been expressed in some quarters that the London Metal Exchange will be able to resume dealings in copper about the middle of next year, but there is as yet no official confirmation of this.

Zinc continues very quiet, and demand on the Continent seems to have fallen off, with the result that g.o.b.'s are obtainable below £85 per ton.

	December 4		December 11	
	Buyers	Sellers	Buyers	Sellers
Tin				
Cash.....	£954	£954 10s.	£947 15s.	£948 5s.
Three months.....	£945 10s.	£945 15s.	£944	£944 10s.
Settlement.....	£954			£948
Week's turnover.....	675 tons		345 tons	
Lead				
Current month.....	£94 15s.	£95	£96 10s.	£96 15s.
Three months.....	£94 15s.	£95	£96 10s.	£96 15s.
Week's turnover.....	4,750 tons		4,950 tons	

DECEMBER 11 PRICES

COPPER

Electrolytic £285 0 0 d/d

LEAD AND TIN

(See our London Metal Exchange report for Thursday's prices)

ZINC

G.O.B. spelter, foreign, duty paid ... £110 0 0 d/d
G.O.B. spelter, domestic ... £110 0 0 d/d
Electrolytic and refined zinc ... £114 0 0 d/d
Special high grade ... £116 0 0 d/d

ANTIMONY

English (99%) delivered,
10 cwt. and over ... £225 per ton
Crude (70%) ... £210 per ton
Ore (60% basis) ... 20s. — 22s. nom. per unit, c.i.f.

NICKEL

99.5% (home trade) ... £454 per ton

OTHER METALS

Aluminium, £166 per ton.
Bismuth (5 cwt. lots) 17s. 6d. lb.
(min. 2 cwt. ex-warehouse).
Cadmium (Empire), 14s. 4d. lb.
Chromium, 6s. 3d./6s. 7d. lb.
Cobalt, 20s. lb.
Gold, 248s. f.o.z.
Iridium, £60 oz. nom.
Magnesium, 2s. 10d. lb.
Manganese Metal (96% - 98%)
2s. 2d./2s. 3d. per lb. d/d
Osmiridium, £40 oz. nom.
Osmium, £65/£70 oz. nom.
Palladium, £715s./£810s. oz.
Platinum, £27/£33 5s. -
Rhodium, £42 10s. oz.
Ruthenium, £25 oz.
Quicksilver, £70 10s./£71
ex-warehouse
Selenium, 25s. nom. per lb.
Silver 72½ d. f.o.z. spot and F'd.
Tellurium, 18s./19s. lb.

ORES, ALLOYS, ETC.

Bismuth ... 30% 6s. 3d. lb. c.i.f.
20% 4s. 6d. lb. c.i.f.
Chrome Ore—
Rhodesian Metallurgical (lumpy) £13 2s. per ton c.i.f.
" " (concentrates) £13 2s. per ton c.i.f.
" " Refractory £12 14s. per ton c.i.f.
Baluchistan Metallurgical £14 15s. 6d. per ton c.i.f.
Magnesite, ground calcined £26 - £27 d/d
Magnesite, Kaw £10 - £11 d/d
Molybdenite (85% basis) 105s. 10d. per unit c.i.f.
Wolfram (65%) 410s. c.i.f. U.K. buying
432s. 6d. d/d U.K. selling
Scheelite 400s. c.i.f. U.K. buying
422s. 6d. d/d U.K. selling
Tungsten Metal Powder 30s. 8d. nom. per lb. (home)
(for steel manufacture)
Ferro-tungsten 27s. 6d. nom. per lb. (home)
Carbide, 4-cwt. lots £32 3s. 9d. d/d per ton
Ferro-manganese, home £49 0s. 8d. per ton
Manganese Ore U.K.
(48% - 50%) 6s. per unit
Brass Wire 2s. 8½d. per lb. basis
Brass Tubes, solid drawn 2s. 2½d. per lb. basis

THE MINING MARKETS

The new Account on the Stock Exchange, which runs on until after the Christmas holidays, opened with a return of firmness in gilt-edged stocks. Mining shares have been steadily poised. Immediate supporters of gold issues on higher gold price hopes, focused their attention to the views expressed by Mr. J. A. Dunn, Chief Mineral Economist of the Australian Bureau of Mineral resources. He contends that the gold industry, in any country, does not face a bright future with the price of the metal pegged at \$35 an oz., but that if it were raised to a reasonable level, renewed activity in mining would result.

This problematical reasoning has not, however, influenced prices and with neither the Cape nor Paris dealing, Kafirs main support has resided in the dividends now being announced. There have been few forecasts in the matter of individual payments, but it is confidently expected that the aggregate amount will be satisfactory. The total distributed in June was £10,415,070 as against £11,714,204 in December of last year.

There have been only small price changes amongst Central Rand producers, but in the Western group, Blyvoors, West "Dries" and Doornfontein came in for attention, while Randfontein were quoted fractionally better.

Amongst Far Eastern mines, buying of East Daggafontein coincided with revived talk of the company being added to the uranium schedule. It is working both the Main and Kimberley reefs (just as is the companion producer, Daggafontein, which is in the uranium group). Sub Nigel were also favoured on dividend hopes and the factors which should have a beneficial effect on life.

In the O.F.S. list, St. Helena were sold down to virtually their lowest since dealings started in 1946, but an upward move in Free State Geduld stemmed from optimistic feeling

about the flooded No. 2 shaft and hopes of it being brought back into operation shortly.

Anglo American hardened in the Finance section and Gold Fields benefited by the meeting. West Wits further deflection results of borehole E9K on farm Kleinfontein 36, giving reef intersections of 8.2 and 9.1 dwt. passed without much comment.

The Rhodesian gold list was brightened up by Cam & Motor reaching a new high level on the increased half-yearly dividend of 20 against 18 p.c., continued good developments and splitting of the 12s. 6d. units into shares of 2s. 6d. each.

In the "Jungle," Ashanti continued to be stimulated by the rich strike which multiplied out to the impressive figure of 32,001 in.-dwt.—richer than the Geduld No. 1 borehole in the O.F.S. in 1946. Firmness of Ariston was assisted by record November gold output and rise in working profit of £10,782 to £57,486.

There has been little doing amongst Australians, but the Colombian gold producer, Frontino, gave way on the absence, so far, of an interim.

Movements of shares in the base metal group has betrayed uncertainty. Eastern tins followed the usual pattern with Tronoh outstanding on hopes of some recognition being given to mark the company's golden jubilee, while Beralit Tin were bought in anticipation of an interim payment. Elsewhere Con. Murchison rose on hopes of the half-yearly dividend being equal to the June 3s. 6d., although antimony has since drooped further in price.

Rhodesian copper shares attracted little attention but Rhodesia-Katanga came on offer on rumours of a forthcoming disappointing progress report. Copper is the last of the non-ferrous metals to remain under Government control and the only metal holding up full restoration of the London Metal Exchange to its traditional pre-war position. It is felt that free dealings should soon come about.

FINANCE	Price Dec. 10	+ or - over week	O.F.S.	Price Dec. 10	+ or - over week	MISCELLANEOUS GOLD (cont'd.)	Price Dec. 10	+ or - over week	TIN (Nigerian and MISCELLANEOUS contd.)	Price Dec. 10	+ or - over week
African & European ..	2 1/8	- 1/8	Freddies ..	6 1/4	- 1 1/2	St. John d'El Rey ..	22-6	- 3/4	Geevor Tin ..	14.6	- 1/2
Anglo American Corp.	18 1/2	- 1/2	Freddies N. ..	7 1/10	- 1 1/2	Zams ..	24-6	- 1 1/2	Gold & Base Metal ..	3.6	- 1/2
Anglo French ..	22 1/2	- 1/2	Freddies S. ..	7 9/10	- 3/4			Jantar Sigeta ..	11 1/4	- 1/2	
Anglo Transvaal Consol.	22 1/2	- 1/2	F.S. Geduld ..	2 1/2	- 1/2	DIAMONDS & PLATINUM			Iso Tin Area ..	10.3	- 1/2
Central Mining (£1 shrs.)	33.9	- 7 1/2	Geoffries ..	10 1/2	- 10 1/2	Anglo American Inv. ..	4	- 1/2	Kaduna Prospectors ..	3/3	- 1/2
Consolidated Goldfields.	14 1/2	- 1/2	Harmony ..	19.3	- 3/4	Casta ..	24.6	- 1 1/2	Kaduna Syndicate ..	4.3	- 1/2
Consolidated Selection ..	23 1/2	- 7 1/2	Obit ..	36 1/2	- 7 1/2	Cent. Diam. of S.W.A. ..	4	- 7/8	London Tin ..	5.8	- 1/2
East Rand Consols.	23 1/2	- 1/2	Lydenburg Estates ..	8.9	- 3/4	De Beers Delf. Bearer ..	65.9	- 1/2	United Tin ..	2.10	- 1/2
General Mining ..	30 1/2	- 1/2	Merrisport ..	3 10 1/4	- 1/2	De Beers Pld. Bearer ..	14 1/2	- 1/2			
H.E. Prop.	31	- 1/2	Middle Wits ..	14.6	- 6/8	Pots Platinum ..	8.10	- 1 1/2	SILVER, LEAD, ZINC		
Henderson's Transvaal ..	30 1/2	- 3/4	Onit ..	36 1/2	- 7 1/2	Waterwaal ..	14.9	- 1 1/2	Bell Hill South ..	43 1/2	- 7 1/2
Johnnies ..	47 1/2	- 1 1/2	President Brand ..	17.3	- 4/4			Burna Corporation ..	1.6	- 1/2	
Rand Mines ..	3 1/8	- 1/8	President Steyn ..	16	- 1/2	COPPER			Consol. Zinc ..	25	- 1/2
Transvaal Coal ..	14.3	- 1/4	St. Helena ..	14 7 1/2	- 1 1/2	Chlorid ..	55.6	- 9/8	Lake George ..	12.10	- 1/2
Strathmore Consol.	25	- 1/2	F.C. & G. ..	12	- 1 1/2	Esperanza ..	3.8	- 3/4	Mount ..	24	- 1/2
Union Corp. (2 1/2 units)	29.6	- 3	Virginia Ord. ..	12	- 1 1/2	Indian Copper ..	4.7	- 1/2	New Broken Hill ..	23.3	- 1/2
Vereeniging Estates ..	31	- 1/2	Welkom ..	19	- 1 1/2	Messina ..	6.3	- 1/2	North Broken Hill ..	49.4	- 1/2
West Wits ..	41.6	- 1 1/2	Western Holdings ..	31	- 1 1/2	Nanga ..	52	- 1/2	Rhodesian Broken Hill ..	14.3	- 1 1/2
						Rhod. Anglo-American ..	11.4	- 1 1/2	San Francisco Mins. ..	24.3	- 1 1/2
						Rhodesia Selection ..	15.6	- 1 1/2	Uruwira ..	4.1	- 1/2
						Rhokana ..	18.4	- 1 1/2			
RAND GOLD			WEST AFRICAN GOLD			Rio Tinto ..	23	- 1 1/2	MISCELLANEOUS BASE METALS & COAL		
Blyvoors ..	42.6	- 6/8	Amalgamated Basket ..	1.6	- 1 1/2	Roan Antelope ..	13.3	- 1 1/2	Anual. Colliers of S.A. ..	46	- 1 1/2
Brakpan ..	16	- 9/8	Ariston ..	5.10	- 1 1/2	Selection Trust ..	36.2	- 2 1/2	Associated Manganese ..	43.6	- 1 1/2
City Deep ..	25	- 1 1/2	Ashanti ..	20.3	- 6/8	Tharsis Sulphur Br. ..	59.6	- 2 1/2	Cape Asbestos ..	17.8	- 1 1/2
Consol. Main Reef ..	30 7 1/2	- 1 1/2	Bilant ..	5.9	- 1 1/2			C.C. Mangano ..	51.3	- 1 1/2	
Crown ..	39.4	- 1 1/2	Bremang ..	5.9	- 1 1/2	TYN (Eastern)			Consol. Murchison ..	28.3	- 1 1/2
Daggas ..	31	- 3/4	G.C. Main Reef ..	6	- 1 1/2	Ayer Hilton ..	25	- 1 1/2	Mashaba ..	8	- 1/2
Diamondfontein ..	26.3	- 6/8	G.C. Collection Trust ..	6 1/2	- 1 1/2	Bangor ..	7.7	- 1 1/2	Natal Navigation ..	24	- 1/2
Durban Deep ..	21	- 2 1/2	Komoag ..	1.14	- 1 1/2	Bengrin ..	10.9	- 1 1/2	Rhod. Montello ..	11.6	- 1 1/2
E. Daggas ..	18.9	- 1/2	Lyndhurst Deep ..	2.1	- 1 1/2	Hongkong ..	7.6	- 1 1/2	Turner & Newall ..	86	- 1 1/2
E. Geduld .. (4/- units)	39.4	- 1 1/2	Mariu ..	1.3	- 1 1/2	Ipo ..	19.4	- 1 1/2	Wankie ..	16.14	- 1 1/2
Edwards Prop.	5 1/2	- 1/2	Taqah & Abosso ..	2.9	- 1 1/2	Kamunting ..	11.6	- 6/8	Witbank Colliery ..	53.14	- 7 1/2
Geduld ..	5 1/2	- 1/2	AUSTRALIAN GOLD			Kepong Dredging ..	6.6	- 3/4	CANADIAN MINES		
Govt. Areas ..	14	- 1/2	Boulder Perseverance ..	2.3	- 1 1/2	King's Tin Mines ..	13.6	-	Adams Lake ..	33.8	- 1 1/2
Grootvlei ..	27.6	- 1 1/2	Gold Mines of Kalgoorlie ..	11.10	- 1 1/2	Malayan Dredging ..	23.6	- 3/4	Hollinger ..	53.1	- 1 1/2
Kimberley ..	11 1/4	- 1/4	Great Boulder Prop. ..	1.6	- 1 1/2	Humbly Grove ..	15.6	- 3/4	Highgate B. Mining ..	37.3	- 1 1/2
Lupatards Vlei ..	23	- 6/8	Lake View and Star ..	18.6	- 1 1/2	Pahang ..	18	- 3/4	International Nickel ..	57.5	- 1 1/2
Marievale ..	19.6	- 3/4	Mount Morgan ..	18.6	- 1 1/2	Pengkalan ..	12.6	- 1 1/2	Mining Corp. of Canada ..	7.5	- 1 1/2
Middlefontein East ..	21.10	- 1/4	North Kalbarri ..	12.6	- 6/8	Rambutan ..	12	- 1 1/2	Noranda ..	51.41	- 1 1/2
New Kimberlfontein ..	26.10	- 1/4	Sons of Gwalia ..	7.9	- 1 1/2	Siamese Tin ..	22.3	- 3/4	Quement ..	10	- 1 1/2
New Pioneer ..	12.3	- 9/8	South Kalbarri ..	8.9	- 1 1/2	Southern Kinta ..	14.4	- 1 1/2	Yukon ..	4.4	- 1 1/2
Randfontein ..	25.3	- 3/4	Western Mining ..	11	- 1 1/2	Sulphur ..	25	- 1 1/2			
Randfontein West ..	10.6	- 1/2	MISCELLANEOUS GOLD			S. Malayan ..	13	- 3/4			
Robinson Deep ..	20	- 1 1/2	Cam and Motor ..	48.3	- 7 1/2	Sungei Kinta ..	18.1	- 1 1/2	OIL		
Rose Deep ..	20	- 1 1/2	Champion Reef ..	6.6	- 1 1/2	Tekka Talpaing ..	28	- 3/4	Anglo-Iranian ..	5 1/2	- 1 1/2
Simmer & Jack ..	5.6	- 3/4	Falcon Mines ..	7.3	- 3/4			Apex ..	41.3	- 1 1/2	
S.A. Lands ..	31.10	- 7 1/2	Globe & Phoenix ..	5.9	- 1 1/2	TIN (Nigerian and MISCELLANEOUS)			Attcock ..	25	- 7 1/2
Springs ..	21.4	- 1 1/2	G.F. Rhodesian ..	5.9	- 1 1/2	Tin ..	5	- 1 1/2	Burnah ..	41.3	- 7 1/2
Stiffont ..	21.4	- 1 1/2	Humbly & Rhodesian ..	5.1	- 1 1/2	Amlekan ..	9.6	- 1 1/2	Canadian ..	32.6	- 1 1/2
Sub Nigel ..	43.9	- 1/2	Motapa ..	1.7	- 1 1/2	Beralat Tin ..	34	- 1 1/2	Mexican Eagle ..	23	- 7 1/2
Van Dyk ..	10	- 3/4	Mysore ..	3	- 1 1/2	Bisichi ..	4	- 1 1/2	Shell (bearer) ..	78.9	- 7 1/2
Vereeniging ..	15.9	- 1/2	Nundydroog ..	6	- 1 1/2	Chlorid ..	4.10	- 1 1/2	Trinidad Leasehold ..	27	- 1 1/2
Vlaakfontein ..	27.6	- 6/8	Oroville ..	11.6	- 1 1/2	Ex-Lands Nigeria ..	4	- 1 1/2	Ultramar ..	24.4	- 1 1/2
Vogelstruifuit ..	19.3	- 1 1/2									
West Driefontein ..	53.1	- 7 1/2									
West Rand Consolidated ..	45.9	- 1 1/2									
Western Reefs ..	45.9	- 1 1/2									

COMPANY NEWS AND VIEWS

Rand Dividend Season Opens

The December Rand dividend season opened this week with the half-yearly declaration from the operating companies in the Anglo American, General Mining, Goldfields and Anglo Transvaal group of mining companies.

Luipaards Vlei, Rietfontein Consolidated, Robinson Deep, Brakpan, and Simmer & Jack paid more than in the June quarter, but East Daggafontein, Rand Leases and Venterspost are paying less than they did six months ago. Generally speaking distributions were lower than a year ago.

The following table shows the current distributions compared with the payments made for the previous three half-years.

Company	June (1951)	Dec. (1951)	June (1952)	Dec. (1952)
Anglo-American	s. d.	s. d.	s. d.	s. d.
Brakpan.....	1 0 1 1½	7½	9	
Dagga.....	3 0 3 0	3 0	3 0	
E. Dagga.....	1 4½ 1 4½	1 1½	1 0	
S.A. Land.....	2 0 2 3	1 9	1 9	
Springs.....	4½	4½	3	3
W. Reefs.....	1 3	1 3	1 3	1 3
Gold Fields				
Libanon.....	3	3	3	3
Luipaards Vlei.....	1 0	8	7	7½
Rietfontein Con.....	1 6	1 6	1 3	1 4½
Robinson Deep.....	1 0	1 0	6	9
Simmer.....	4	4	3	4
Sub Nigel.....	5 3	4 9	4 0	4 0
Venterspost.....	1 0	8	6	5
Vlakfontein.....	10	10	8	8
Vogels.....	1 0	1 0	1 0	1 0
General Mining				
S. Roodepoort.....	9	9	9	9
W. Rand Consol.....	1 6	1 6	1 6	1 6
Anglo-Transvaal				
Rand Leases.....	2 0	1 9	1 4½	1 0

Consolidated Murchison (Transvaal) Goldfields and Development Co., the antimony and gold producer in the Anglo-Transvaal group, declared a final dividend for 1952 of 3s. 6d. per 5s. share, making 7s. for the year against 40s. in 1951. Associated Manganese Mines in South Africa, also in the Anglo-Transvaal group, announced a final dividend of 3s. 9d. per 5s. share, making 6s. 6d. for 1952 compared with 7s. 3d. in 1951.

Lydenburg Platinum, in the General Mining group, has declared an interim dividend for the year to June 30 next of 4½d. per 5s. share.

Rand Selection Pays Same

Unlike its subsidiary, South African Townships, Mining & Finance Corporation, whose accounts are reviewed elsewhere in these columns, Rand Selection Corporation does not give a complete breakdown of the revenue received during the year as between dividend income and share dealing profits. In the profit and loss account, revenue, shown at £805,314 (£879,540) covers income received from dividends, interest, townships, claim licences, share dealing and other sources, less amounts written off. The sale of freehold property during the year brought in £60,963, compared with £30,400.

Year to Sept. 30	Gross Revenue	Expenses	Tax	Net Profit	Divi- dend	Carry Forward
	£	£	£	£	%	£
1952	866,277	85,871	54,500	725,906	40	440,110
1951	909,940	80,024	130,000	699,916	40	364,502

Nevertheless, expenses were less, and with appreciably lower taxation liabilities net profit showed an increase of about £26,000 over the preceding year. The usual dividend distribution of 40 per cent required £647,598 and at the financial year-end the balance carried forward was improved by £75,608.

The corporation is closely connected with the Anglo-American Corporation of South Africa group and at the date of the report, the Corporation's indebtedness to Anglo American was £150,000. Since that time, however, Rand Selection's total

indebtedness of £800,000 has been extinguished by Anglo American subscribing for 400,000 shares of Rand Selection at £2 per share.

The book cost of the company's shares and investments at September 30 last was recorded in the balance sheet at £4,367,242 compared with a market valuation at the same date of £9,637,476.

The annual meeting will be held in Johannesburg on December 31. The Hon. H. V. Smith is chairman.

Dominion Reef in the Red

The report and accounts of Dominion Reefs (Klerksdorp) for the year to June 30 last revealed that after providing for all development expenditure and administration charges, etc., a loss of £27,263 was incurred on the year's operations. This absorbed the credit balance brought forward amounting to £23,260 and left the company at its financial year-end with a debit balance on appropriation account of £4,003.

In April last, the company was registered as a "controlled registered mine" and thus became liable to assessment to contribute to the Silicosis Fund. No assessment of its liability has yet been made.

In August last, the company gave three months' notice of its intention to cease mining operations and though this period has expired, operations are being continued on a limited scale.

The directors report that a full statement of the present position will be made by the chairman, Mr. A. H. Moreing, who has just returned from South Africa at the annual meeting to be held in London on December 31.

Klerksdorp Consolidated's Position to be Clarified at the Annual Meeting

In their report for the year ended June 30 last, the directors of Klerksdorp Consolidated state that conditions continued unfavourable for the carrying out of the proposals for the development of the company's mining interests. A full statement relative to the present position will be made by the chairman, Mr. A. H. Moreing, who has just returned from South Africa, at the annual meeting called for December 31, at 1 Broad Street Place, London, E.C.2, at 2.30 p.m.

Although it was necessary to charge to development account accruing administrative expenses, cash payments, it is stated, have been kept to a minimum.

The development account showed that receipts amounted to £425 (£494), that expenses totalled £7,190 (£8,263), and that the debit balance carried forward at the financial year-end was £325,216 against £318,451.

The balance sheet showed that current liabilities exceeded current assets by £49,680. Mining interests and mineral rights were recorded at £304,090 (same) and include 692,333 ordinary shares of 5s. each in Dominion Reefs (Klerksdorp), the market price of which was 1s. 9d. (1951—1s. 6d.) per share.

National Mining Corporation Widens its Investment Horizons

Gross dividend income of the National Mining Corporation for the year ended March 31 last advanced sharply to £15,590 compared with only £540 in the previous 15 month period. This was the principal revenue item making up the total income of £24,593 against £15,373 for the previous 15 months. Outgoings were considerably less, £7,092 against £15,373, and net profit for the year was £17,501 compared with a loss of £27,535.

After allowing £6,203 (£57,229) for depreciation of quoted investments and £4,517 (£768,706) for writing off leasehold oil properties and equipment, the adverse balance on profit and loss account at the financial year-end was reduced to £852,959 compared with £860,358.

The company's immediate investment policy is to widen the scope of its portfolio by increasing the proportion of its dividend paying holdings. From a comparison of the last two annual reports, it would appear that during the year under review the company retained its "West Africans," consisting of Amalgamated Banket, Ariston and G.C. Selection Trust, and its "Nigerians," comprising Mines Development Syndicate (West African) and Nigerian Consolidated Mines. But to its

Rhodesian investment in Falcon Mines, the Corporation has acquired an interest in Coronation Syndicate and in Olympus Consolidated Mines. In addition to its substantial holding in Premier Consolidated Oilfields it would appear that the company has acquired an interest in Ultramar. Other new investments appearing in the accounts under review include Bangrin Tin, Esperanza Copper and Sulphur, Darwins Ltd. and International Utilities Corporation.

In the longer run, the company hopes to acquire interests in selected development companies where capital appreciation can be anticipated.

The annual meeting will be held in London on February 11. Major-General W. W. Richards is chairman.

Witbank Colliery's Capital Expenditure

Although inadequate and erratic supplies of railway trucks prevented Witbank Colliery from getting into its full stride during the year to August 31 last, the company dispatched 16,431 tons more than in the preceding year. The various classes of coal comprising this total, shown in the table below, reveal the effect of the installation during the year of two more crushers which resulted in approximately 75 per cent of the total tonnage dispatched being fine coal.

Year to	Classes Of Coal Dispatched From The Mine—In Tons					
Aug. 31	Rounds	Nuts	Peas	Pea-Duff	Duff	Total
1952	428,123	321,392	52,065	431,583	182,714	1,415,877
1951	884,079	125,115	199,233	Nil	191,019	1,399,446

The company's immediate need is for a coal washing plant and ancillary equipment to deal with the output from the Wolvekrans Section. This will form the bulk of the £460,000 capital expenditure envisaged over the next two years which will, the directors state, entail a restriction on dividend distribution to their present level.

Year to	Gross	Expenses	Tax	Net	Divi-	Carry
Aug. 31	Revenue			Profit	dend	Forward
	£	£	£	£	%	£
1952	199,579	4,954	52,057	142,568	17½	219,320
1951	166,313	4,360	37,101	124,852	18½	140,821

The coal washing plant will enable the company to fully exploit its various coal seams and will also extend very materially the life of the mine.

A comprehensive series of bore holes are being drilled in the area to the south of the Olifants River to obtain more detailed information regarding the coal reserves in this area. Preliminary investigations were satisfactory but the full results have not yet been received from the Fuel Research Institute.

The annual meeting will be held in Johannesburg on December 29. Mr. P. H. Anderson is chairman.

S.A. Townships Distributes More

As its name implies South African Townships, Mining and Finance Corporation has a stake in the real estate world as well as in the mining industry.

Year to	Total	Expenses	Tax	Net	Dividend	Carry
Sept. 30	Income*			Profit		Forward
	£	£	£	£	£	£
1952	169,562	41,165	4,100	124,297	120,000	203,995
1951†	135,477	31,848	4,331	99,298	90,000	201,398

*Net revenue arising out of property sales, freehold conversions, rents, royalties, dividends, interest, sharedealing and other sources, less provisions and amounts written off.

†Nine months, January, 1951—September, 1951.

A breakdown of the company's revenue showed that it was made up of £81,589 (£82,968) realized on share dealings, £48,710 (£34,471) from dividends, and £30,541 (£16,311) from the sale of stands and small holdings. However, as the previous period covered only nine months, the rate of earnings during the year under review was somewhat lower. Shareholders received 6d. per 10s. share as against 4½d. in the preceding nine month period. The carry forward at the financial year end was slightly stronger.

The book cost of the company's investments, in companies other than its own subsidiaries, was recorded in the balance sheet at £2,067,930 (£2,126,332) and at September 30 last these

had a market value of £4,420,855.

No further property was acquired during the year. The company has a substantial stake in the Orange Free State goldfields, indirectly through its large holding of Orange Free State Investment Trust, and directly through its holdings in Loraine Gold, the two Presidents, Brand & Steyn, and Welkom Gold.

The annual meeting will be held in Johannesburg on December 31. Mr. H. C. Koch is chairman and managing director.

Anglo-Burma Almost Clear of Its Debenture Payments

The report and accounts of Anglo-Burma Tin Co. for the year to May 31 last showed that at the financial year-end the company had an outstanding balance on its 6 per cent registered debentures of £69,688. But since that date it has managed to reduce this balance to a mere £2,550 by its successful offer of these debentures to existing holders at the rate of £110 per £100 debenture.

Sales and stock of tin ore during the year realized £49,755 against £167,761, reflecting the drop in output, from all sources from 213 tons to 73 tons. This sharp decline was of course, due to the continued lawlessness prevailing in the Tavoy district of Burma which meant that operations at Heinda were severely curtailed. However, a windfall in the form of an insurance claim for loss of profits amounting to £41,917 gave a more cheery look to the accounts and, after all charges were met, the company finished up on the right side of the ledger to the amount of £3,058 which, with the £4,972 brought in gave a forward balance of £8,030.

The annual meeting will be held in London on December 29. Mr. John Miller is chairman.

Ribon Valley Reduces Production Costs

The feature of the operating results of Ribon Valley for the year ended March 31 last was the reduction in production costs per ton by £28. At a time when most Nigerian companies are showing the full impact of the first complete year's operation of the 1950 increase in wages as well as the new and stiffer graduated scale of royalty payments to the Nigerian Government, this is highly commendable. On the other hand, it may well be that working costs were abnormally high in 1951 as they showed an increase of no less than £169 per ton over the 1950 figure.

Year to	Output	Content	Per ton tin ore	Price	Reserves
Mar. 31	(tons)	% Sn	Cost	£	(tons)*
1952	77	73.8	542	960	3,161
1951	76	74.9	570	1,085	3,161

*Including property of subsidiary company—Northern Nigeria (Bauchi) Tin Mine.

Why the company was called upon to bear profits tax charges of £3,000 on smaller earnings than in the previous year when tax liabilities under this head were nil was probably due to the loss incurred in 1949/50, but this is not clear from the accounts. This extra tax has added a further burden to the net profit available for distribution. Thus to maintain the dividend rate at 5 per cent the carry forward has been reduced.

Year to	Tin	Mining	Tax	Net	Divi-	Carry
Mar. 31	Revenue	Costs*		Profit	dend	Forward
	£	£	£	£	%	£
1952	54,917	41,724	6,400	2,616	5	8,404
1951	61,797	43,336	3,700	7,930	5	9,327

*Including tin realization charges, royalty, freight, etc.

Assuming that costs will be held down, the outlook for the current year should give shareholders cause for good cheer. Production for the first seven months is 57 tons compared with 50 tons in the corresponding period of the year under review.

The annual meeting, which is being held at Winchester House, Old Broad Street, London, E.C.2, at 3 o'clock on December 17, should be interesting as the chairman, Mr. A. Hedley Williams, has just returned from a visit to the company's property in Nigeria and will give an up-to-date statement on the company's operations.

Rand and O.F.S. Mine Returns for November

During November the general trend of profits of the Rand and O.F.S. gold producers was downwards. Tonnage throughputs were also generally lower and in several cases costs showed a rise over the October figures.

The young O.F.S. producers, however, continued to show improvement; St. Helena's profits advancing to 14,016 from virtually the same tonnage crushed; Welkom's profit also improved; while Stiffontein, the new Klerksdorp producer, announced profits of £45,192.

West Driefontein, in the Gold Fields group, again surged ahead and the profit figure reported of £150,469 represented a new monthly high and was attributable to a higher yield per ton.

Sub Nigel's operations, it was stated, were affected by a shortage of electric power.

Company	November, 1952			Current Financial Year			Last Financial Year		
	Tons (000)	Yield (oz.)	Profit (£000)	Tons (000)	Yield (oz.)	Profit (£000)	Tons (000)	Yield (oz.)	Profit (£000)
Gold Fields									
Libanon	81	16,251	41.5	1	415	83,058	213	413	76,989
Lupatards	95	18,303	47.9	1	506	96,230	256	502	92,905
Rietfontein	26	59,23	26.8	1	296	66,096	302	300	66,835
Robinson	108	19,019	13.1	1	1231	204,436	134	1238	195,389
Simmer & J.	121	19,490	14.2	1	1362	217,487	177	1382	219,641
Sub Nigel	60	20,842	101.0	1	330	114,093	593	335	117,940
Venterspost	101	23,230	57.8	1	523	119,766	314	498	108,425
Vlaakfontein	33	13,029	74.1	1	409	151,800	867	406	152,173
Vogels	89	23,140	97.4	1	807	233,618	919	853	214,639
West Drief.	27	19,081	150.4	1	130	80,869	589	—	—
Anglo American									
Brakpan	120	21,314	28.1	1	1297	233,468	390	1261	237,349
Daggas	229	54,292	367.0	1	2556	608,392	4275	2571	631,219
East Daggas	91	19,979	53.6	1	1049	186,766	678	1087	199,071
S.A. Lands	108	8,079	60.2	1	1210	218,028	759	1263	221,331
Springs	157	21,487	17.6	1	1799	237,466	208	1839	239,403
Welkom	55	10,452	11.9	1	550	95,448	53	—	—
W. Reef Ex.	111	23,007	94.4	1	1234	257,439	1122	1112	245,558
Central Mining									
Blyvoor	101	60,830	514.8	1	533	322,038	2796	546	353,133
City Deep	161	32,065	25.6	1	1993	343,751	281	1800	363,043
Consol. M.R.	180	24,678	25.6	1	123	127,320	144	969	130,920
Crown	275	42,474	42.4	1	2992	476,137	435	2991	508,570
D. Roope	180	30,228	79.9	1	1926	343,872	927	1975	339,442
East Rand P.	197	42,948	121.8	1	2260	486,544	1579	2413	492,777
Modder B.	55	59,599	4.4	1	621	68,490	68	594	68,187
Modder E.	109	12,742	19.2	1	585	67,784	114	600	70,829
Rose Deep	37	11,040	8.1	1	909	126,782	108	912	128,789
Welgedacht	32	3973	4.4	1	171	20,873	22	169	20,001
I.C.I.									
E. Champ.	26	43,972	8.0	1	329	50,566	91	358	53,478
Gert G. M.A.	240	32,576	60.1	1	2693	354,678	565	2526	346,325
New State	44	59,83	1.0	1	498	69,010	11	648	84,490
Randfontein	330	40,119	30.1	1	3822	455,937	326	3759	453,493
Wit. Gold	58	7105	2.4	1	658	78,333	27	650	75,039
Union									
East Geduld	135	40,500	313.3	1	1587	476,142	3762	1598	479,464
Geduld Prop.	180	14,320	29.6	1	1151	167,023	360	1157	169,360
Grootevlei	184	39,830	247.7	1	1996	460,540	2943	2148	479,086
Marievale	57	14,252	65.8	1	665	166,744	775	670	166,438
St. Helena	55	11,061	14.0	1	540	106,989	72	—	—
Van Dyk	93	14,489	8.2	1	1151	168,576	131	1104	166,651
General Mining									
S. Roope	26	59,78	22.1	1	316	30,911	117	136	30,327
W. Randfont.	235	34,002	127.4	1	2392	366,585	1370	2327	370,663
Anglo Transvaal									
N. Klerksdorp	11	14,14	1.0	1	124	14,220	11	100	11,882
Rand Leases	176	29,673	46.8	1	915	152,576	299	917	153,766
Village M.R.	34	5,284	14.5	1	169	26,450	74	170	26,454
Others									
N. Kleinfont.	110	13,882	30.0	1	1182	153,989	647	1177	153,678
Sparwater	110	23,316	12.4	1	115	25,160	127	115	25,908
Stiffontein	54	12,801	45.2	1	237	50,268	76	—	—
W. Nigel	17	—	8.2	1	84	—	37	—	—

Notes.—Profit figures are in all cases figures of working profit excluding profit from sale of gold at premium prices. In case of groups marked with an asterisk (*) profit includes sundry revenue. Profit figures preceded by L indicate a loss.

Company Shorts

Tin Fields of Nigeria Incur Small Loss.—Tin Fields of Nigeria incurred a net loss of £829 on operations for the year to March 31 last, compared with a profit, before tax, in the previous year of £3,710. The lower earnings reflect increases in Nigerian expenses, a fall in production from 27 tons to 24½ tons and a lower average price received per ton tin ore which at £945 against £1,081 for the previous year, resulted in a fall of tin revenue from £20,593 to £15,890.

The chairman states that as a result of preliminary investigations it is possible that columbite may exist in certain of the company's areas and in view of current demand for this mineral investigations are being continued.

The annual meeting will be held in London on December 17. Mr. A. L. Scrivener is chairman.

Rukuba Tin's Three Tons of Columbite-Containing Concentrates.—Although Rukuba Tin Mines during the year to March 31 last produced slightly more tin, the average price received declined by £135 to £954 per ton. Additionally, mining costs, which included an increase in royalty payments to the Nigerian Government by £487 to £2,581, were up by £1,654 to £12,274, so that after providing for all outgoings and writing off £1,764 in respect of prospecting expenditure, the company registered a loss of £675.

Year to Mar. 31	Output (tons)	Tin Revenue £	Working Profit £	Tax £	Net Profit £	Carry Forward £
1952	23	15,437	1,789	700	1,089	D.R. 798*
1951	21	16,056	3,772	1,586	2,186	D.R. 123*

*After writing off £1,764 in respect of prospecting new areas and labour camps (1951—£902).

This debit would not have occurred, however, had the company been able to realize its accumulated stocks of crude columbite-containing concentrates amounting to some three tons. This material must undergo further treatment and at the date of the chairman's statement, November 24, it was not known what the recoverable quantity would be nor the estimated profit from its realization. When these two facts are known, the profit so obtained will be credited to next year's accounts.

The annual meeting will be held in London on December 17. Mr. A. L. Scrivener is chairman.

Kepong Reduces Dividend to 25 Per Cent.—A decline in both the volume and grade of ground treated by Kepong Dredging during the year to June 30 last resulted in output falling from 389 tons to 317 tons.

Year to June 30	Ore Sales* £	Mining Costs £	Tax £	Net Profit £	Dividend %	Carry Forward £
1952	170,678	113,969	41,276	19,073	25	21,891
1951	240,311	90,274	93,347	56,275	45	17,757

*Net sale price.

The lower output helped to push up costs and these cut heavily into the reduced earnings. The dividend distribution was cut to 1s. 3d. (2s. 3d.) per ss. share on the £135,000 issued capital.

The annual meeting will be held in London on December 17. Mr. John Herbert Rich is chairman.

Tongkah Harbour Pays Less.—The decline in the output of tin ore by 426 tons to 532 tons together with the fact that the average price received on all ore sold during the year to June 30 last decreased from £1,023 to £921 per ton were the ultimate factors responsible for the contraction of Tongkah Harbour Tin Dredging's net profit to £68,755 compared with £249,218 in the preceding year. The tax man was the chief sufferer as his off-take was reduced to £33,000 compared with £145,461. On the other hand, shareholders did as well as could be expected and received 2s. 3d. per ss. share against 2s. 6d. the previous year. The carry forward at the company's financial year-end was £139,206 against £274,714, the decrease being largely accounted for by an allocation of £150,000 (nil) to reserve for the reconditioning of the Ronpibon dredge.

The company has improved its production since the end of its financial year and output for the first four months of the current year totalled 283 tons compared with 201 tons in the comparable period of the year under review.

The annual meeting was held in Kuala Lumpur, Malaya on December 10. Mr. D. T. Waring is chairman.

Tronoh-Malayan Group Companies Adjourn Meeting Until New Year.

Four companies in the Tronoh-Malayan Group of tin companies, Ayer Hitam, Sungai Besi, Malayan Tin Dredging and Southern Malayan Tin Dredging have announced that it has proved impracticable to circulate the printed accounts for the year to June 30 last within the prescribed time. The annual meetings of Ayer Hitam and Sungai Besi called for December 17, and Malayan Tin and Southern Malayan Tin on the following day will, therefore, be entirely formal, being called solely to comply with the Companies' Act. The announcements state that these meetings will be adjourned until a convenient date early in the New Year.

Selayang Tins' Dredge to be Dry Docked.—Selayang Tin Dredging has announced that its dredge will be entering dry dock during this month for the replating of its pontoon. This work will probably take six months to complete at a cost estimated to be around £30,000. The dry docking of the dredge was forecast in the chairman's statement circulated with the report and accounts for the year to September 30, 1951.

The company also announces that it has been decided to defer consideration of a further dividend until the accounts for the year ended September 30, 1952 are submitted at the next annual meeting which, it is expected, will be held in April, 1953.

Output for the year to September 30 last at 352 tons showed an increase over the previous year by 78 tons. Mr. Charles Jackson is chairman.

Kamra Tin's Future Undecided.—As previously stated, owing to unprofitable dredging operations Kamra Tin Dredging ceased working and the report and accounts now published cover the sixteen month period to July 31 last. During that period profit, after providing for all charges, amounted to £3,354 against £4,130. The balance on profit and loss account brought in amounted to £225 and, after charging U.K. and Siamese taxation based on current profits and crediting income from prior years of £257 there remained a debit balance on profit and loss account of £677.

The company has a contingent liability of £10,000 in respect of a contract made prior to September, 1939 to purchase additional areas in Siam but expenditure to date amounting to approximately £7,500 will be set off against this sum. The excess of current assets over current liabilities at the financial year-end was £80,688.

No definite decision regarding the future of the company has been reached, the directors state, but negotiations are proceeding in connection with the disposal of the company's assets in the East.

The annual meeting will be held in London on December 29. Mr. P. J. Burgess is chairman.

Pattani Tin Incurs Further Loss.—After providing for all charges, Pattani Tin for the year to March 31 last incurred a loss of £6,745 and thus the credit balance on profit and loss account was reduced to £9,238. The annual meeting will be held in London on December 29. Capt. H. S. M. Harrison-Wallace is chairman.

Chendai Consolidated.—Working profit of Chendai Consolidated for the year ended April 30 last was £1,206 (£3,067), to which was added £1,374 (£44), being taxation provisions no longer required, and £1,351 (£1,283) brought in, making £3,932 (£4,398) available. Taxation liabilities were reduced to £271 against £1,520, the sum of £2,000 (£1,527) was written off capital expenditure, leaving the carry forward stronger at £1,661 against £1,351 brought in.

British Malayan Tin Syndicate.—During the year ended June 30 last British Malayan Tin Syndicate treated 21,458 tons (21,364) for a recovery of 110 tons tin concentrates of an average assay value of 38 per cent (37.46 per cent) which realized £34,500 compared with £28,088 in the preceding year. The estimated mill profits, subject to depreciation, interest charges and administration expenses, amounted to £9,500.

Pari Tin Passes Dividend.—Tribute received by Pari Tin during the year to June 30 last from the recovery of 41 tons (44 tons) on its Malayan property amounted to £4,066 compared with £4,838. This was the chief revenue item contributing to the gross revenue of £4,989 (£5,852). Expenses were lighter as were total tax liabilities, £1,564 against £1,977, and after providing for all outgoings net profit was £1,801 against £1,377. No dividend was paid (20 per cent) and the carry forward at the financial year-end was £4,281 against £2,480 brought in.

Since the company's issued capital is only £10,000 it is obvious that a distribution could have been made out of the year's profits. That this was not done was due to an unexpected delay in completing negotiations for the sale of its property. However, negotiations are now nearing completion and it is hoped to be able to furnish details of the sale and also of the way in which it is proposed to deal with the surplus assets of the company at the annual meeting to be held in London on December 17. Net current assets at June 30 last were £24,059. Mr. John Herbert Rich is chairman.

Sione Tin at a Standstill.—The report and accounts of Sione Tin (F.M.S.) for the year to March 31, last disclosed that mining on a tribute basis for the seven months period—September, 1951 to March, 1952—provided a revenue of £3,999 (nil). But at the end of March the company's tributor gave up his task and at the date of the report, November 28, the available

information reads that a reliable Chinese miner is surveying the area. The company's claim for war damage has not yet been assessed. The profit for the year, after all charges, amounted to £974 against a loss previously of £5,071. The annual meeting will be held in London on December 22. Mr. W. A. Fell is chairman.

Apex (Trinidad) Pays More.—Apex (Trinidad) Oilfields, in a preliminary statement have announced a final dividend of 1s. 9d., free of tax, per 5s. unit of stock making a total distribution for the year of 2s. 3d., free of tax, compared with 2s., free of tax, in 1950-1951.

Year to Sept. 30	Working Profit	Tax	To Development	Net Profit	To Reserve	Carry Forward
1952	1,852,660	1,055,000	250,000	547,660	300,000	234,298
1951	1,900,733	1,070,000	300,000	*530,733	300,000	234,138

*Includes allocation of £100,000 for staff pensions.

The full report and accounts will be issued on December 29. The annual meeting will be held in London on January 21 and the dividend, if approved, will be paid on January 31.

American Anglo-Transvaal Investment Corporation.—The profit and loss account of American Anglo-Transvaal Investment Corporation for the year to June 30 last revealed that net profit, after providing for all expenses including taxation liabilities of £7,000 (£11,250), was £31,261 compared with £58,577 in the previous year. An amount of £21,471 was written off unquoted investments and the carry forward at the financial year-end was £85,350 against £75,560 brought in.

The annual meeting will be held in Johannesburg on December 19. Mr. S. G. Menell is chairman.

Lydenburg Estates Show a Profit.—Apart from royalties it receives on all asbestos produced on one of its farms by Munnik Myburgh Chrysotile Asbestos Co., the principle assets of Lydenburg Estates are in five developing mines in the Orange Free State, Presidents Brand and Steyn, Welkom, Merriespruit and Virginia.

The profit and loss account for the year to June 30 last showed that royalties received from its asbestos interests totalled £14,244. Other sundry revenue raised this figure to £17,540 and after providing for all expenses, including taxation liabilities of £3,200 (nil), net profit for the year was £6,033 compared with a loss in the preceding year of £1,950.

The annual meeting will be held in London on December 16. Mr. A. Comar Wilson is chairman.

Middlevie Estate and Gold Mine.—The net profit of Middlevie Estate and Gold Mining for the year ended June 30 last was £8,075 (£23,441). This figure, however, included a non-recurring receipt of £13,670 in respect of arrear interest from New Union Goldfields. The forward balance at the company's financial year-end was £29,508 compared with £24,534 brought in.

The annual meeting was held in Johannesburg on December 10. Mr. H. A. Mackay is acting chairman.

New Free State Gold Estates Reports Loss.—New Free State Gold Estates incurred a loss on the year's operations of £13,054, compared with a loss in the preceding year of £10,306. The annual meeting was held in Johannesburg on December 1. Mr. H. A. Mackay is acting chairman.

New Central Witwatersrand Areas Results.—The working profit of New Central Witwatersrand Areas for the year to June 30 last was £6,654 compared with £6,841. Taxation required £8 (same), the sum of £6,554 (£2,860) was written off mineral interests and prospecting expenditure leaving £92 to be added to the £6,955 brought in, giving a total carry forward at the financial year-end of £7,047. The annual meeting will be held in Johannesburg on December 17. Mr. M. W. Rush is chairman.

Progress at Nanwa.—In the directors' report and balance sheet of Nanwa Gold Mines now published, progress reports for the nine months ended September 30 last are given in the form of quarterly statements. The general impression obtained from these progress reports is that the recovery results are steadily improving, that the supply of labour is no longer regarded as one of the company's major problems and that with improved efficiency, tonnage should show considerable increase at no additional labour cost.

The annual meeting will be held in London on December 19. Mr. T. Oliver Farnworth is chairman.

RHOKANA CORPORATION LTD.**THE BANCROFT MINE****MR. H. F. OPPENHEIMER'S SPEECH**

The Annual General Meeting of Rhokana Corporation Ltd. was held at Kitwe, Northern Rhodesia on December 10, 1952, **Mr. H. F. Oppenheimer** presiding. He said: Shareholders will have noticed that the formation of a company to establish another large copper mine in the Northern Rhodesian Copperbelt was foreshadowed in the Chairman's statement issued with the Annual Report and Accounts. A few additional details are now available.

The financial structure of the new company is at present receiving the active consideration of your Board. In the meanwhile, expenditure on prospecting, borehole drilling and other preliminary work has been financed by advances from your Corporation, and approximately £300,000 has been spent to date. It is estimated that it will take about five years and cost about £11,000,000 to bring the mine to production.

EXTENSIVE ORE BODIES

The mine will be located on extensive ore bodies near the Belgian Congo border about 14 miles north-west of the property of Nchanga Consolidated Copper Mines Ltd. The ore bodies occur in areas comprised in Special Grants issued to your company by the owners of the mineral rights, The British South Africa Co.

Prospecting of the area of these Special Grants, totalling 56,848 acres, over a period of years proved the existence of three ore bodies. These are known as the Konkola ore body, the Kirila Bomwe North ore body and the Kirila Bomwe South ore body. The two Kirila Bomwe ore bodies are about a mile apart on the surface. The Konkola ore body is 4½ miles away. Prospecting rights are also held over a further 6,140 acres to cover possible extensions of the ore bodies in depth.

RESERVES 80,000,000 TONS

It is estimated that the reserves of copper ore exposed during the diamond drilling programme total approximately 80,000,000 tons with an average copper content of 3.60 per cent. The Konkola ore body is estimated to contain 32,900,000 tons with an average copper content of 2.48 per cent, and the Kirila Bomwe North and South ore bodies are estimated to contain 46,700,000 tons with an average copper content of 4.39 per cent. These values are comparatively rich. The minerals are copper sulphides, with small amounts of oxide. A feature of the prospecting already completed has been that the deepest holes so far drilled show values and widths well above economic limits and there is little doubt that substantial reserves remain to be proved by further drilling. On the basis of the ore reserves so far proved, the mine would have a life of 40 years at the production rate envisaged.

Planning of the mine is in progress. A concentrator with a capacity of about 150,000 tons a month will be erected at Kirila Bomwe to treat the ore from all three ore bodies. The concentrate will be railed to your company's smelter at Nkana, some 55 miles away. With recent improvements in technique, it is expected that the Rhokana smelter will be able to handle the new mine's production of approximately 4,000 s.tons of copper a month without major additions of plant.

A NEW TOWNSHIP

The establishment of the new mine will involve the construction of a railway from Nchanga to Kirila Bomwe with a further connection to Konkola, the construction of roads and linking up with the electric power grid which serves all the mines of the Copperbelt through the Northern Rhodesia Power Corporation Ltd. A new mining township will be laid out for European staff and employees, who will total approximately 500. African townships with houses for single and married African employees, who will number about 4,000, will also be established.

Preliminary work has already started at the site. An aerial survey to assist in the laying out of road, rail and power line routes has been completed.

TRANSFER OF REGISTRATION

I should now like to refer to a recent Press announcement by Rhodesian Anglo American Ltd. advising that a petition has been presented by that company to the United Kingdom Parliament for leave to introduce a Private Bill, with a view to securing the transfer of registration of that company and others of the group, including your company, from the United Kingdom to Northern Rhodesia.

Your company has, since the beginning of 1951, been managed and controlled in Northern Rhodesia where the whole of its business is carried on, whilst it continues to be a company incorporated in England. The present position is felt to be anomalous and your directors therefore considered that this company should be actively associated with Rhodesian Anglo American Ltd. in the steps being taken to finalize the removal to Northern Rhodesia of the Rhoanglo group of companies.

The Northern Rhodesia Government has been kept fully informed of the intention to introduce the Bill, which by its terms extends to Northern Rhodesia, and has accorded its full approval.

The report and accounts were adopted.

RHODESIAN ANGLO AMERICAN LTD.

The Annual General Meeting of Rhodesian Anglo American Ltd. was held at Kitwe, Northern Rhodesia on December 10, 1952, **Mr. H. F. Oppenheimer** presiding. He said: I should like to refer to a recent Press announcement made by your Company that a Petition had been presented to the United Kingdom Parliament for leave to introduce a Private Bill, with a view to securing the transfer of registration of your Company and the others of the Group, from the United Kingdom to Northern Rhodesia.

Your Company has, since the beginning of 1951, been managed and controlled in Northern Rhodesia where the whole of its business is carried on, whilst it continues to be a company incorporated in England. The present position is felt to be anomalous and your Directors therefore considered that your Company should take active steps to finalize the removal to Northern Rhodesia of the Companies of the Group.

The Northern Rhodesia Government has been kept fully informed of the intention to introduce the Bill, which by its terms extends to Northern Rhodesia, and has accorded its full approval.

The Report and Accounts were adopted.

DIVIDENDS

Ampat Tin Dredging 15% i (Dec. 30)
Anglo-Ecuadorian Oilfields 10%
Central Mining and Investment 3¼% i (Dec. 20)
Consolidated Company Bulfontein 7.3125d. (Jan. 28)
Cons. African Selection Trust 60%
Cons. Gold Fields of South Africa 3s.
Fresnillo Co. 45c. (Dec. 18)
Griqualand West Diamonds 2s. 10.2d. (Jan. 28)
Johnson Matthey 3% i
Lake George Mining 60%
Lampa Mining 7¼%
Messina (Transvaal) Development 220%
New Jagersfontein Mining & Exploration 2½% (Jan. 28)
Powell Duffryn 4¼% Cum. Pref. 2½% (Jan. 1)
Rand Selection Corporation 40%
Rhodesia Copper Refineries 5%
Rhokana Corporation 5¼%
Ribon Valley Tinfields 5%
Tanganyika Concessions Ord. 30%

i interim

* Tax free

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LAKE VIEW & STAR LTD.

DANGERS OF WAGE SYSTEM

SIR JOSEPH BALL'S SPEECH

The Forty-Second Annual General Meeting of Lake View & Star Ltd., was held on December 10, 1952, at Chartered Insurance Institute, 20, Aldermanbury, E.C.2.

Sir Joseph Ball, K.B.E. (Chairman of the company), presided. The Chairman, in the course of his speech, said: The mining profit for the year amounted to £482,151, as compared with £563,789 last year, a decrease of £81,638. Two interim dividends, each of 6d. per share, less tax, were declared during the year. Your Directors recommend the payment of a final dividend of 1s. 6d. per share, less tax, thus maintaining a total of 2s. 6d. per share for the year.

MINING OPERATIONS

Development footage increased during the year by 1,365 ft. to 23,232 ft., and of the 14,422 ft. advanced on lodes, 9,727 ft., or 67 per cent., was in ore averaging 6.0 dwt. per ton over a width of 54 in. Compared with last year, this shows an increase of 1,533 ft. and of 0.7 dwt. per ton. The tonnage of ore developed per foot of development less "dead work" is 29.57 tons, a slight increase over the figure for the previous year. The major part of the year's development was carried out in the Western Group of mines, and of the 9,855 ft. driven on the numerous lodes, 6,766 ft. was in ore averaging 6.2 dwt. per ton over a width of 53 in. This is an increase of 1,593 ft. and of 1.1 dwt. per ton on the previous year. In this group, the "Minor Lodes" continue to give most satisfactory results, 5,846 ft., or 86 per cent of the payable footage averaging 6.2 dwt. per ton over 53 in., an increase of 1,122 ft. and of 1.0 dwt. per ton. At the two previous annual meetings, I have referred to the great increase in the tonnage of ore obtained from the "Minor Lodes" since 1932, when the ore reserve was only 186,000 tons. At July 1, 1952, this reserve had grown to 1,307,000 tons, which with the ore milled from these lodes during the 20 years, makes a total increase of more than 4,250,000 tons. In the Lake View and Associated Mines, or Eastern Group, the payable footage amounted to 2,961 ft., the grade being maintained at 5.6 dwt. per ton over a slightly reduced width of 55 in.

ORE RESERVES

The ore reserves at July 1, 1952, were estimated to be 3,723,700 tons, averaging 4.82 dwt. per ton—a decrease of 376,700 tons and an increase of 0.1 dwt. per ton on the previous year. This decrease is almost entirely due to the necessity of eliminating just over 342,000 tons of marginal ore, which, owing to the further rise in production costs, can no longer be regarded as payable. I shall have some further remarks to make on this aspect of the situation later in my speech. Positive and broken ore amounts to 3,424,500 tons, averaging 4.73 dwt. per ton, or 92 per cent of the total reserve. Of this tonnage, 74 per cent, or 2,525,900 tons, averaging 4.7 dwt. per ton, is in the Western Group, and 26 per cent, or 898,600 tons, averaging 4.81 dwt. per ton in the Eastern Group. The programme of increased mechanization underground has continued, and additional battery locomotives and loaders have been installed. Diamond drilling underground totalled 7,386 ft.; of this, 3,449 ft. is in the Western Group and 3,937 in the Eastern. While this drilling is mainly in connection with stoping and development operations, some interesting inter-sections of ore were made that have not yet been exposed by subsequent development. Ore milled during the year totalled 652,247 tons, averaging 4.76 dwt. per ton, an increase of 26,347 tons and 0.36 dwt. per ton respectively. The gold recovery at 92.22 per cent was 0.23 per cent lower than last year.

Working costs, excluding the retreatment of old residues, increased by 5s. 9d. to 40s. 11d. per ton milled. This heavy rise in costs is due mainly to the continued rise in the basic wage, but partly also to higher prices for stores, particularly explosives, fuel oil and cyanide, and to the increases in freight rates, which latter alone have added some £18,000 per annum to working costs. At the Chaffers retreatment plant, 628,944 tons of old residues were treated for a profit of £12,039. This shows a decrease of £35,350 on last year's figure, due mainly to a marked reduction in the grade of residues from 1.99 dwt. to 0.84 dwt. per ton. It is probable that the treatment of residues from the Ivanhoe dumps will be completed by about March 1953. During recent months there has been an improvement in daily attendance, and surplus labour is now available both for surface and for underground working, though there is still a shortage of skilled men. The introduction of lighter drilling equipment and tungsten carbide tipped steel has been most successful in increasing the output, and we are now able to treat 54,000 tons per four weekly period as compared with an average of approximately 50,200 tons per period during the year under review. It may be added that during the four weeks ended on November 4 last, some 56,700 tons were treated.

THE RISE IN WORKING COSTS

In commenting upon the year's results, I make no apology for drawing special attention to the rise in working cost per ton milled,

from an average of 35s. 2d. during the year ended June, 1951, to an average of 40s. 11d. throughout the year under review. This sharp rise is responsible for the heavy fall in the company's profits; but it has had what, perhaps, may be regarded as an even more serious effect, viz., the elimination from the ore reserves as unpayable of no less than 342,000 tons of marginal ore. This follows upon a reduction during the preceding year, for similar reasons, of 112,000 tons—a total loss in the last two years of some 454,000 tons. The main cause of the steep rise in mining costs in Australia has been the constant additions to what is known as the basic wage. Between February, 1948 and October, 1952, the quarterly increases regularly awarded by the Court have resulted in the basic wage in Kalgoorlie rising from £A.6 1s. 4d. to £A.12 4s. 8d. per week—an increase of over 100 per cent. Additions to the basic wage are inevitably followed by corresponding increases in the cost of living, and these, in turn, result in still further rises in the basic wage, and so on, apparently *ad infinitum*. The dangers inherent in this state of affairs appear to be recognized by the present Australian Government and its advisers. The Australian Tariff Board, in its 1951/52 report, pointed out that the continuing upward trend in industrial costs, threatens employment in Australia, as well as export markets abroad; and picked out the rapidly-rising basic wage as the most serious handicap to Australian industry. Also, so long ago as February last in the House of Representatives, the Prime Minister of Australia stated: "We have in Australia, for better or for worse, a wage system which, being tied as it is at the base not to production but to the cost of living, constantly and inevitably accelerates the rise in costs and prices, without, as we know in these modern times, being very much if any real benefit to the wage earner." Is it too much to hope that with the dangers of the situation recognized, as they clearly are, the Australian Government will be able to find a way out of this vicious circle? I may add that, in the case of the Western Australian gold mining industry, there is yet a further handicap in what is known as the "Industry Allowance," which on the present standard price of gold means a further addition of £A.2 per week to the basic wage. It is, however, only fair to admit that the Australian Government, by agreeing in 1951 to the sale in the free market of almost 100 per cent of the gold produced in the Dominion, has gone some way towards assisting the gold mining industry to stand the strain imposed upon it by the spectacular increases in costs to which I have referred.

The report and accounts were adopted.

PAHANG CONSOLIDATED

The Forty-Sixth Annual General Meeting of The Pahang Consolidated Co. Ltd. was held on December 11 in London.

Mr. D. J. Ward, the Chairman, presided.

The following is an extract from his circulated statement:—In the period under review the results can be considered satisfactory. Output was some 28 tons less than for the year ended July 31, 1951, and the price obtained for our tin was of course considerably down on the high prices of the previous financial year, our surplus on mining account being reduced from £1,219,450 to £844,026.

The year 1951-1952 may be regarded as one of consolidation. The decline in the tonnage of our ore reserves has been arrested although the value is slightly less. A disturbing feature has been the continued rise in mining costs, up again this year by some \$4 per ton crushed, even after allowing for the lower charges, based on the tin price, for royalty and realization. Our monthly mining cost sheets show the peak of the year to have been reached last April, but for the remaining three months of the financial year a small decrease has occurred. The value of stores we must necessarily carry continues to rise and has now reached £334,396.

No new lode of importance has been exposed in development during the year, new ore developed being confined to extension of known lodes. The 1,200 ft. level was opened up from the shaft and good ore exposed on the Utara Lode; but the payability in the drive west has not been continuous. It is the development of the Utara Lodes in depth which offers the most promising prospect of increasing the life of the Williams Mine. To assist development, a diamond drilling contract has been entered into to drill an initial 10,000 ft. Work will begin before the end of 1952.

The price of tin has remained remarkably steady for the last few months. The future course of American economy is the determining factor and as long as American production of consumer goods continues at its present level the price should not fall.

The profit on mining for the year amounted to £844,026 compared with £1,219,450 in the previous year. After charging London general expenses and crediting interest and dividends on investments there is a balance of £885,644. Appropriations of £62,584 for depreciation and £15,750 to write down the investment in the subsidiary company have been made, and a total charge of £487,150 for taxation on the current year's profits has been found necessary. The Directors now recommend final dividends of 11½ per cent on the Preference and 55 per cent on the Ordinary stock.

The report and accounts were adopted.

ANGLO AMERICAN CORPORATION OF SOUTH AFRICA, LTD.

(Incorporated in the Union of South Africa)

NOTICE TO STOCKHOLDERS SIX PER CENT CUMULATIVE PREFERRED STOCK DIVIDEND No. 47

NOTICE IS HEREBY GIVEN that Dividend No. 47 of 3 per cent for the half-year ending December 31, 1952, being at the rate of 6 per cent per annum, has been declared payable to stockholders registered in the books of the Corporation at the close of business on December 31, 1952, and to persons presenting Coupon No. 47 from Stock Warrants to Bearer.

The dividend is declared in the currency of the Union of South Africa and becomes due on January 2, 1953. Dividend Warrants will be posted from the Head and London Offices on or about February 5, 1953.

The dividend is payable subject to the usual conditions which can be inspected at the Head and London Offices of the Corporation.

The Preferred Stock Transfer Books and Register of Members will be closed from January 1, 1953, to January 10, 1953, both days inclusive.

Holders of Stock Warrants to Bearer are notified that the dividend is payable at Barclays Bank (Dominion, Colonial and Overseas), Circus Place, London Wall, E.C.2, or at the Banque de l'Union Parisienne, 6 and 8, Boulevard Haussmann, Paris, on or about February 6, 1953. Coupons must be left four clear days for examination.

The effective rate of Non-Resident Shareholders' Tax is 6.075 per cent.

London Office:
11, Old Jewry, E.C.2.
December 10, 1952.

By Order of the Board,
W. E. GROVES,
London Secretary.

ANGLO AMERICAN CORPORATION GROUP OF COMPANIES

DECLARATION OF DIVIDENDS

NOTICE IS HEREBY GIVEN that dividends have been declared payable to shareholders registered in the books of the undermentioned companies at the close of business on December 31, 1952.

The dividends are declared in the currency of the Union of South Africa and become due on January 2, 1953. Dividend warrants will be posted from the Head and London Offices on or about February 5, 1953.

The dividends are payable subject to the usual conditions which can be inspected at the Head and London Offices of the companies.

The Transfer Books and Registers of Members will be closed in each case from January 1, 1953 to January 10, 1953, both days inclusive.

Holders of Share Warrants to Bearer are notified that the dividends are payable at Barclays Bank (Dominion, Colonial and Overseas), Circus Place, London Wall, E.C.2, or at the Banque de l'Union Parisienne, 6 and 8, Boulevard Haussmann, Paris, on or about February 6, 1953, the respective coupons being as set out in the following tabulation. Coupons must be left four clear days for examination.

NAME OF COMPANY (Each of which is incor- porated in the Union of South Africa)	DIVI- DEND No.	COU- PON No.	RATE OF DIVIDEND per share in Union of South Africa Currency
Brakpan Mines Ltd.	80	80	s. d. 0 9
Daggafontein Mines Ltd.	40	40	3 0
East Daggafontein Mines Ltd.	26	—	1 0
The South African Land & Exploration Co. Ltd.	29	29	1 9
Springs Mines Ltd.	62	62	0 3
Western Reefs Exploration & Development Co. Ltd.	23	—	1 3

NOTE.—The effective rate of Non-Resident Shareholders' Tax for all the above companies is 7.5 per cent.

By Orders of the Boards,

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W. E. GROVES,
London Secretary.

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RAND SELECTION CORPORATION, LIMITED

(Incorporated in the Union of South Africa)
ABRIDGED REPORT OF THE DIRECTORS for the year ended 30th September, 1952

CAPITAL—Authorized: £2,000,000 divided into 8,000,000 shares of 5s. each. Issued: £1,618,993 5s. in 6,475,973 shares of 5s. each, fully paid. Unissued and held in Reserve: £381,006 15s. in 1,524,027 shares of 5s. each. At the 30th September, 1952, 400,000 of the reserve shares were under option at 45s. per share up to and including 31st March, 1954, but this arrangement has since been cancelled.

LOAN FACILITIES—During the year the loan facilities granted by Anglo American Corporation of South Africa, Limited, and referred to in last year's Report were drawn upon, and at the 30th September, 1952, an amount of £150,000 had been borrowed. This item appears in the Balance Sheet under the heading of "Special Loan."

Since 30th September your Corporation has entered into a new agreement with Anglo American Corporation of South Africa, Limited. Shareholders have been advised by circular of the arrangements which provide for the cancellation of the right to take up 400,000 shares at 45s. and the immediate subscription by the Anglo American for 400,000 shares at 40s. Your Corporation has repaid the amount borrowed from the Anglo American Corporation and the loan facilities have been cancelled.

Shareholders registered on the 25th November, 1952, were offered the right to subscribe for £1,600,000 of 5s. per cent unsecured registered notes at par in the proportion of 1 of notes for every 4 shares held in the Corporation. The subscribers of the notes will be given options free of consideration to take up ordinary shares of 5s. each in the Corporation at 30s. per share in the proportion of one share for every 4 of notes subscribed. The options will be exercisable during the period 1st January, 1954, to 31st January, 1954.

The Anglo American Corporation of South Africa, Limited, has, for a cash commission of 2½ per cent, underwritten the offer of notes to shareholders. As a result of these arrangements the capital of your Corporation is now as follows:

Authorized: £2,000,000 divided into 8,000,000 shares of 5s. each.

Issued: £1,718,993 5s. in 6,875,973 shares of 5s. each, fully paid.

Unissued and held in Reserve: £281,006 15s. in 1,124,027 shares of 5s. each.

NOTE—400,000 of the unissued shares will be under option at 30s. per share, exercisable from 1st January, 1954, to 31st January, 1954, to the subscribers of the £1,600,000 of notes.

LOAN STOCK—The 4½ per cent Ten-year Unsecured Loan Stock issued remains unchanged at £1,000,000.

PROPERTY—Freehold and Mineral Rights—During the year your Corporation sold the surface rights over 85,044½ morgen of the farm Rietfontein No. 8 and 118,117½ morgen of the farm Vlakfontein No. 8 to the Town Council of Springs, for use as extensions to the Kwa Thema Native Township Scheme. The Corporation, in order to further its farming activities, purchased portions 1 and 2, measuring 1,000 morgen of the Farm Mabete No. 133, district Letaba Townships—There was, at the 30th September, 1952, a total of 1,148 stands for sale in the Townships of Pollok Park, Selcourt, Selection Park and Brenthurst Extension No. 1. The amount due on stands sold and not taken into account until paid totalled £39,000 at the end of the year.

SHARES AND INTERESTS IN OTHER CONCERNS—Your Corporation's principal interests are in the following companies: Anglo American Investment Trust, Limited; Anglo American Prospecting Company, Limited; Argent Lead and Zinc Company, Limited; Brakpan Mines, Limited; Central Mining Free State Areas, Limited; Daggafontein Mines, Limited; East Daggafontein Mines, Limited; First Electric Corporation of South Africa, Limited; Free State Geduld Mines, Limited; Grootevlei Proprietary Mines, Limited; Hard Metals, Limited; Indutex, Limited; Loraine Gold Mines, Limited; Natal Coast Exploration Company, Limited; New Monteleo, Limited; Orange Free State Investment Trust, Limited; President Brand Gold Mining Company, Limited; President Steyn Gold Mining Company, Limited; Rhodesia Monteleo Asbestos, Limited; Rhodesian Alloys, Limited; Rhodesian Anglo American, Limited; South African Mines Selection, Limited; Springs Mines, Limited; The South African Land and Exploration Company, Limited; Vaal Reefs Exploration and Mining Company, Limited; Vlakfontein Gold Mining Company, Limited; Vogelstruobuit Gold Mining Areas, Limited; Welkom Gold Mining Company, Limited; West African Investment Trust, Limited; Western Holdings, Limited; Western Ultra Deep Levels, Limited.

The market value of the assets comprised under this heading at the 30th September, 1952, taking Stock Exchange quotations where available, and Directors' valuation (but not above cost) in other cases, was £9,637,476 as compared with the figure of £4,367,242, at which they appear in the Balance Sheet. **SOUTH AFRICAN TOWNSHIPS, MINING AND FINANCE CORPORATION, LIMITED**—The principal shareholdings of South Africa Townships, Mining and Finance Corporation, Limited, which is a subsidiary of your Corporation, are: African Gold and Base Metal Holdings, Limited; Anglo American Investment Trust, Limited; Anglo American Prospecting Company, Limited; Durban Roodepoort Deep, Limited; Free State Geduld Mines, Limited; General Box Company, Limited; Loraine Gold Mines, Limited; Orange Free State Land and Estate Company (Proprietary) Limited; Orange Free State Investment Trust, Limited; President Brand Gold Mining Company, Limited; President Steyn Gold Mining Company, Limited; Rand Lease (Vogel) Gold Mining Company, Limited; Vaal Reefs Exploration and Mining Company, Limited; Vlakfontein Gold Mining Company, Limited; Welkom Gold Mining Company, Limited; Western Ultra Deep Levels, Limited.

FINANCE—Profit for the year ended 30th September, 1952 £780,408

Unappropriated profit brought forward from 1951 364,503
1,144,906

From which the following appropriations have been made:
Provision for Taxation £54,500
Dividend No. 75 of 40 per cent (2s. per share) 647,598
Directors' Special Remuneration 2,700
704,798

Balance unappropriated, 30th September, 1952 £440,110

DIVIDEND—Dividend No. 75 of 40 per cent, equal to 2s. per share, in respect of the Corporation's financial year ended 30th September, 1952, was declared on the 10th November, 1952.

COPIES OF THE FULL REPORT AND ACCOUNTS OF THE CORPORATION, AND THOSE OF SOUTH AFRICAN TOWNSHIPS, MINING AND FINANCE CORPORATION, LIMITED, MAY BE OBTAINED FROM THE LONDON OFFICE, 11, OLD JEWRY, E.C.2.

Mining Men

Western Mining Corporation Appointments—Following the death of Sir Walter Massy-Greene, the following appointments have been made to the board of Western Mining Corporation and associated companies:—

Mr. G. Lindesay Clark has been appointed chairman and managing director of Western Mining Corporation and chairman of the associated companies. **Mr. Frank F. Esple** and **Major General Sir Samuel R. Burston** have been appointed deputy managing director and director respectively of Western Mining Corporation. **Mr. Wilfred D. Brookes** has been appointed a director of Gold Mines of Kalgoorlie (Aust.), Central Norsemen Gold Corporation N.L. and Great Western Consolidated N.L. **Mr. J. Chester Guest** has been appointed a director of Great Western Consolidated N.L.

Mr. Harry Hey has been elected chairman of Electrolytic Zinc Co. of Australasia in succession to the late Sir Walter Massy-Greene. Mr. Hey who joined the company in 1917 remains managing director, a position he has held since 1947.

Brigadier R. S. G. Stokes, has relinquished his appointment as technical director of Central Mining & Investment Corporation Ltd., but will remain on the board as a non-Executive Director.

Institute of Metals—Prof. F. C. Thomson, Professor of Metallurgy in the University of Manchester, has been elected President of the Institute for the year 1953-54. Vice-Presidents during the same period will be Major C. J. P. Ball (chairman Magnesium Elektron, Ltd.), Dr. S. F. Dorey (chief engineer-surveyor, Lloyds Register of Shipping), and Prof. G. V. Raynor (Professor of Metal Physics in the University of Birmingham).

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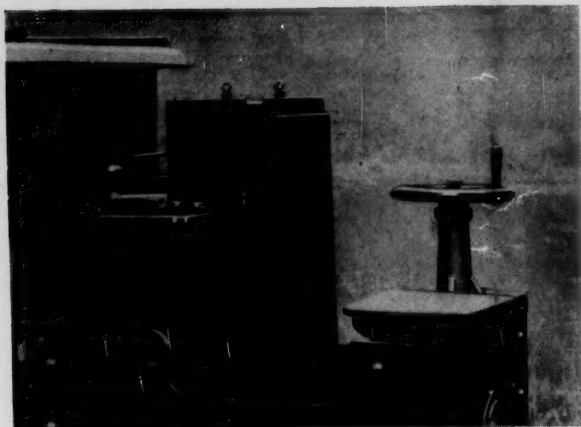
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